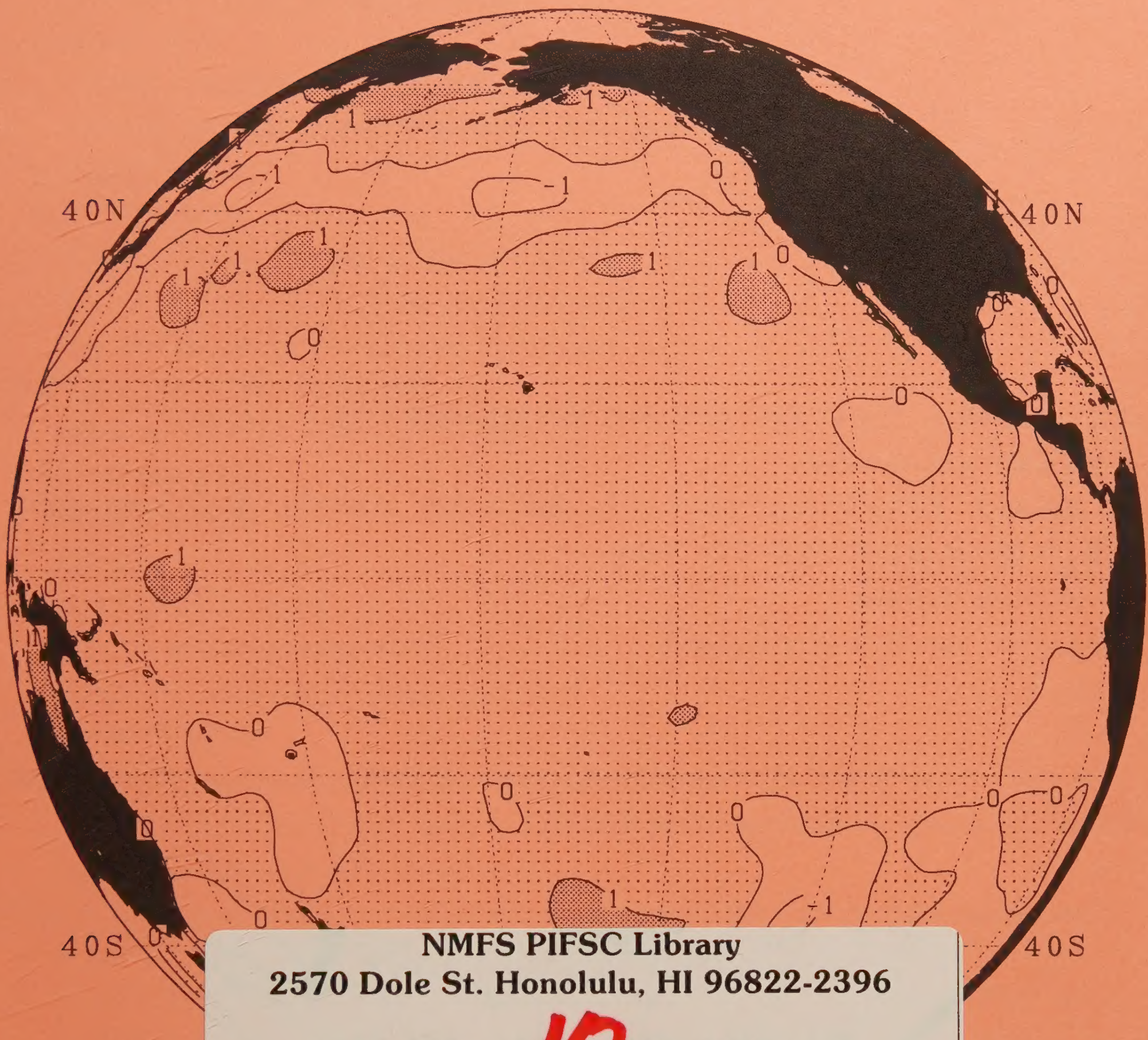
ISSN 1348-5059

気象庁海洋月報

Monthly Ocean Report
October 2003 (No. 130)



Climate and Marine Department
Japan Meteorological Agency

気象庁 気候・海洋気象部

平成15年10月

気象庁海洋月報は、気象庁 気候・海洋気象部 海洋気象情報室で作成しています。
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Monthly Ocean Report is prepared by the Office of Marine Prediction, Climate and Marine Department, Japan Meteorological Agency.

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表紙は、2003年10月の太平洋の月平均海面水温偏差図です。
陰影部は、平年より高温の海域を示しています。

The figure on the front cover shows the monthly mean SST anomalies for October 2003 in the Pacific Ocean.
Areas of positive anomalies are shaded.

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海況の特徴（２００３年１０月）

日本近海の海況

海面水温は、釧路沖から常磐沖にかけて平年より0. 5℃以上低かった。一方、日本海北部と東シナ海南部には+1℃を超える正偏差が見られた（第４図）。

黒潮は、上・下旬は九州・四国から紀伊半島にかけて、中旬は四国から紀伊半島にかけて接岸した後、東海沖を東に流れていた。これより東では、上旬は139°E付近で小さく蛇行し、中・下旬は東海沖の33. 5°N、138°E付近で北東に向きを変え、いずれも三宅島付近を通過して房総半島沖を北東に流れていた（第９図)。

太平洋の海況

太平洋赤道域の海面水温は、155°Eから140°Wにかけてと120°W付近及び90°W付近で平年より0. 5℃以上高く、165°E付近では+1℃を超える正偏差が見られた。一方、フィリピンの南の海域では平年より0. 5℃以上低かった。

北太平洋の海面水温は、ベーリング海、アラスカ湾、及び30°Nに沿った150°Eから日付変更線にかけてと150°Wから125°Wにかけて平年より1℃以上高かった。一方、45°N、160°E付近と45°N、160°W付近では平年より1℃以上低かった（第１７図)。

Highlights October 2003

Seas adjacent to Japan

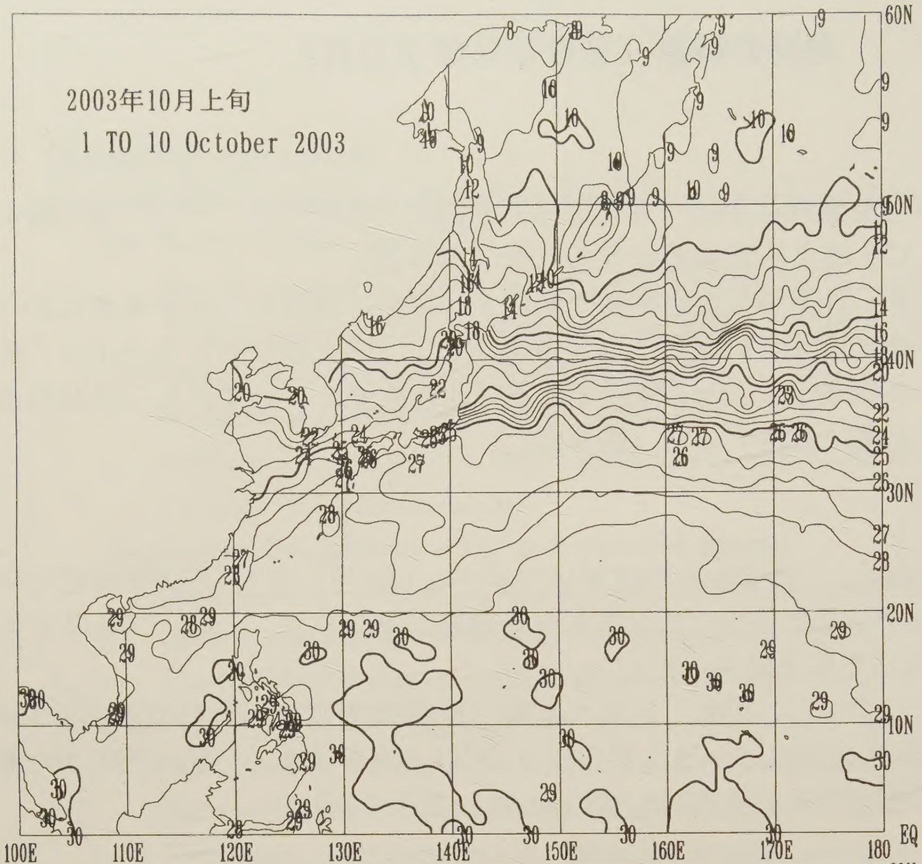
SSTs were more than 0.5℃ below normal in the seas from off Kushiro to off Joban. SSTs were more than 1℃ above normal in the northern part of the Japan Sea and southern part of the East China Sea (Fig. 4).

The Kuroshio flowed close to coasts from Shikoku to the Kii Peninsula in the middle of the month. In the rest of the month, it flowed close to coasts from Kyushu to the Kii Peninsula. And it flowed eastward off Tokai throughout the month. In early October, it slightly meandered around 139°E, passed near Miyake Island, and flowed NE-ward off the Boso Peninsula. In the rest of the month, it turned NE-ward around 33.5°N, 138°E, passed near Miyake Island, and flowed NE-ward off the Boso Peninsula (Fig. 9).

Pacific Ocean

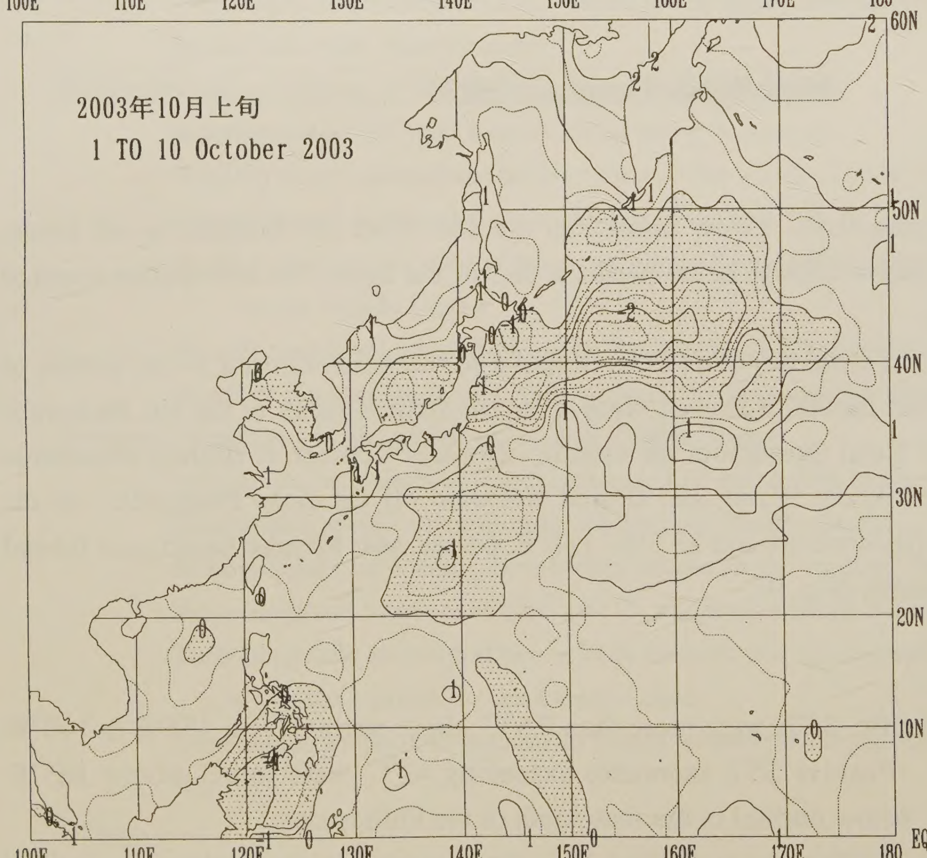
In the equatorial Pacific, SSTs were more than 0.5℃ above normal from 155°E to 140°W and from 120°W to 90°W. Positive SST anomalies exceeding +1℃ were found around 165°E. SSTs were more than 0.5℃ below normal in the seas south of the Philippines.

In the North Pacific, SSTs were more than 1℃ above normal in the Bering Sea, Gulf of Alaska, from 150°E to the date line along 30°N and from 150°W to 125°W along 30°N. SSTs were more than 1℃ below normal around 45°N, 160°E and around 45°N, 160°W (Fig. 17).



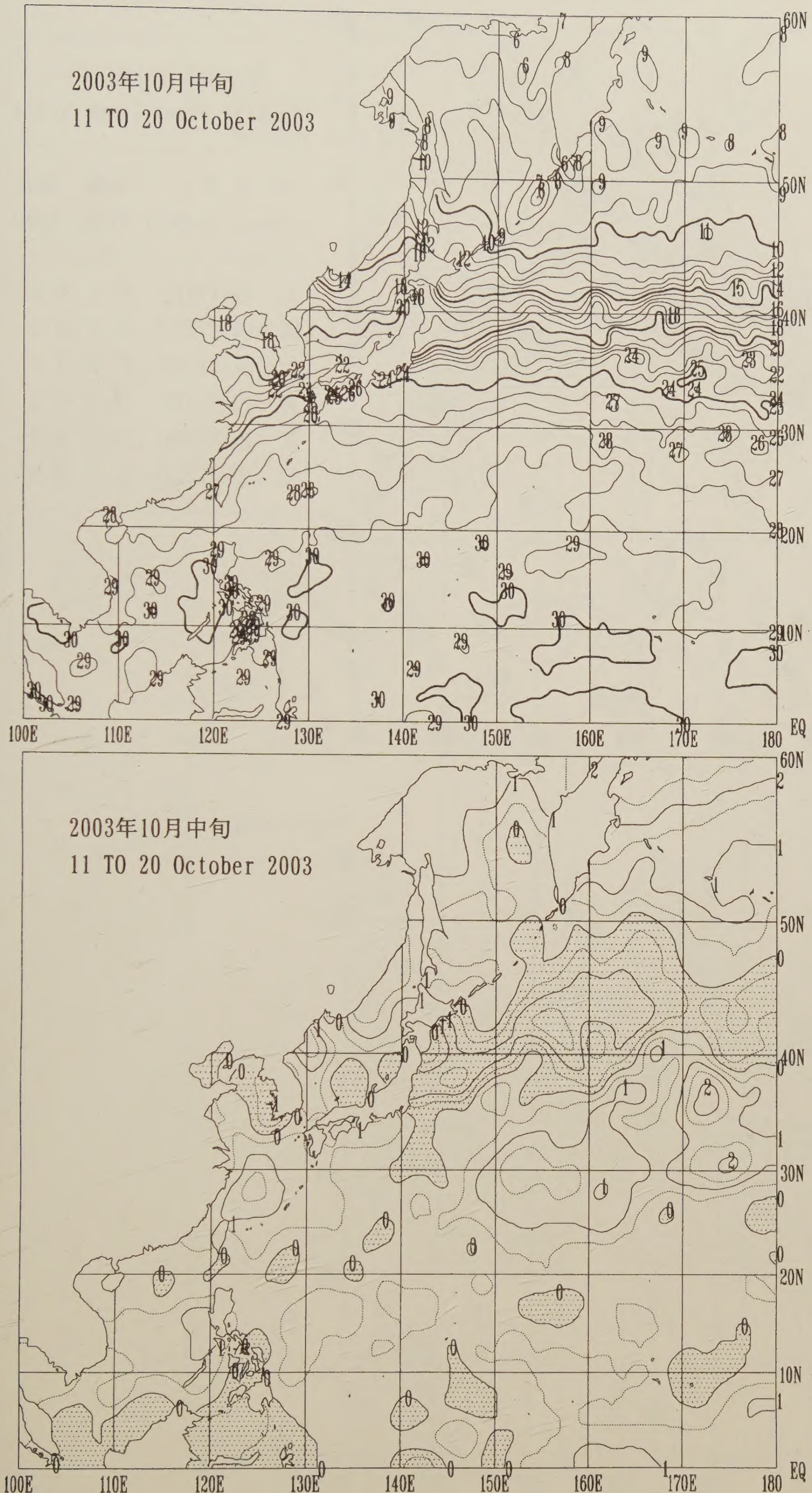
旬平均沿岸水温(℃)
Coastal Water Temperature

地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	27.5	0.1
御前崎(47655)	21.8	-0.7
小名浜(47598)	18.1	-2.4
宮　古(47585)	18.3	-0.5
江　差(47428)	17.5	-1.5
浜　田(47755)	22.4	-0.5



第1図 北西太平洋旬平均海面水温図(上)及び偏差図(下) (2003年10月上旬)

Fig. 1 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 1st ten-day period in October 2003. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

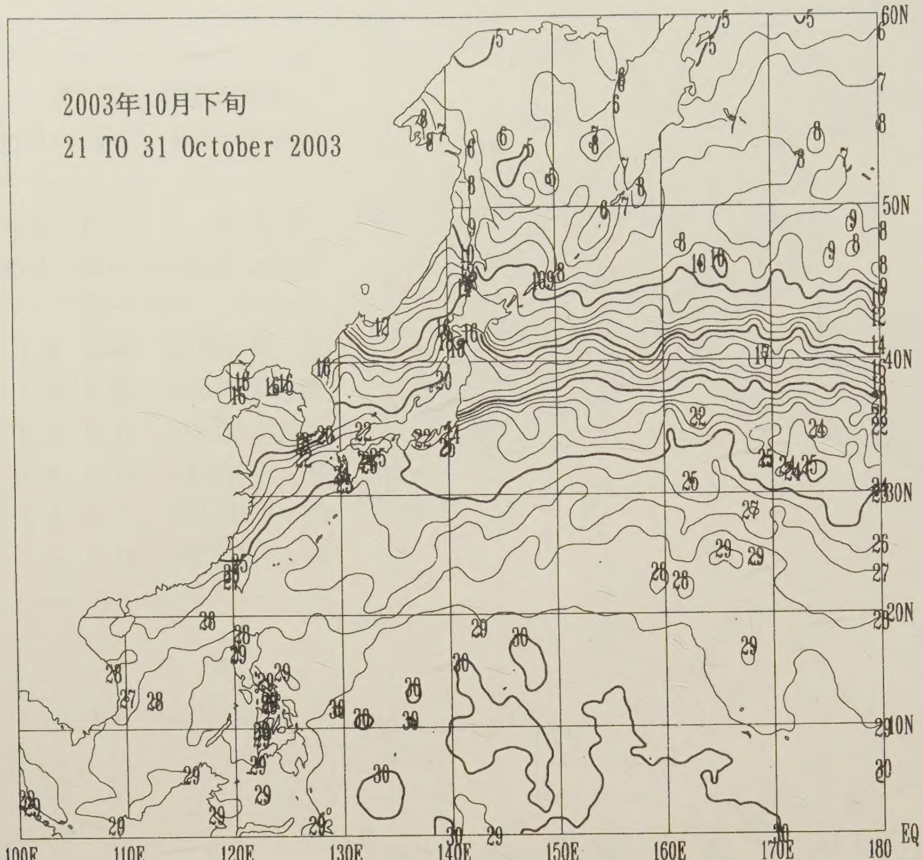


旬平均沿岸水温(℃)
Coastal Water Temperature

地 点 名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	26.8	0.1
御前崎(47655)	20.6	-0.7
小名浜(47598)	17.6	-2.0
宮　古(47585)	17.4	-0.7
江　差(47428)	17.3	0.0
浜　田(47755)	21.8	-0.1

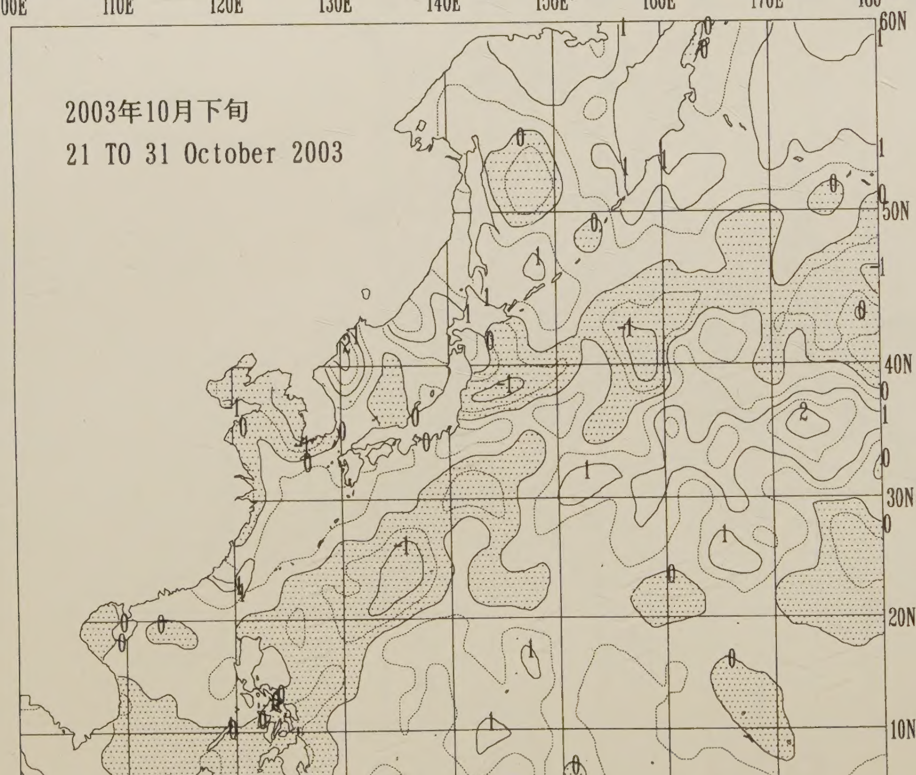
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Fig. 2 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 2nd ten-day period in October 2003. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



旬平均沿岸水温(℃)
Coastal Water Temperature

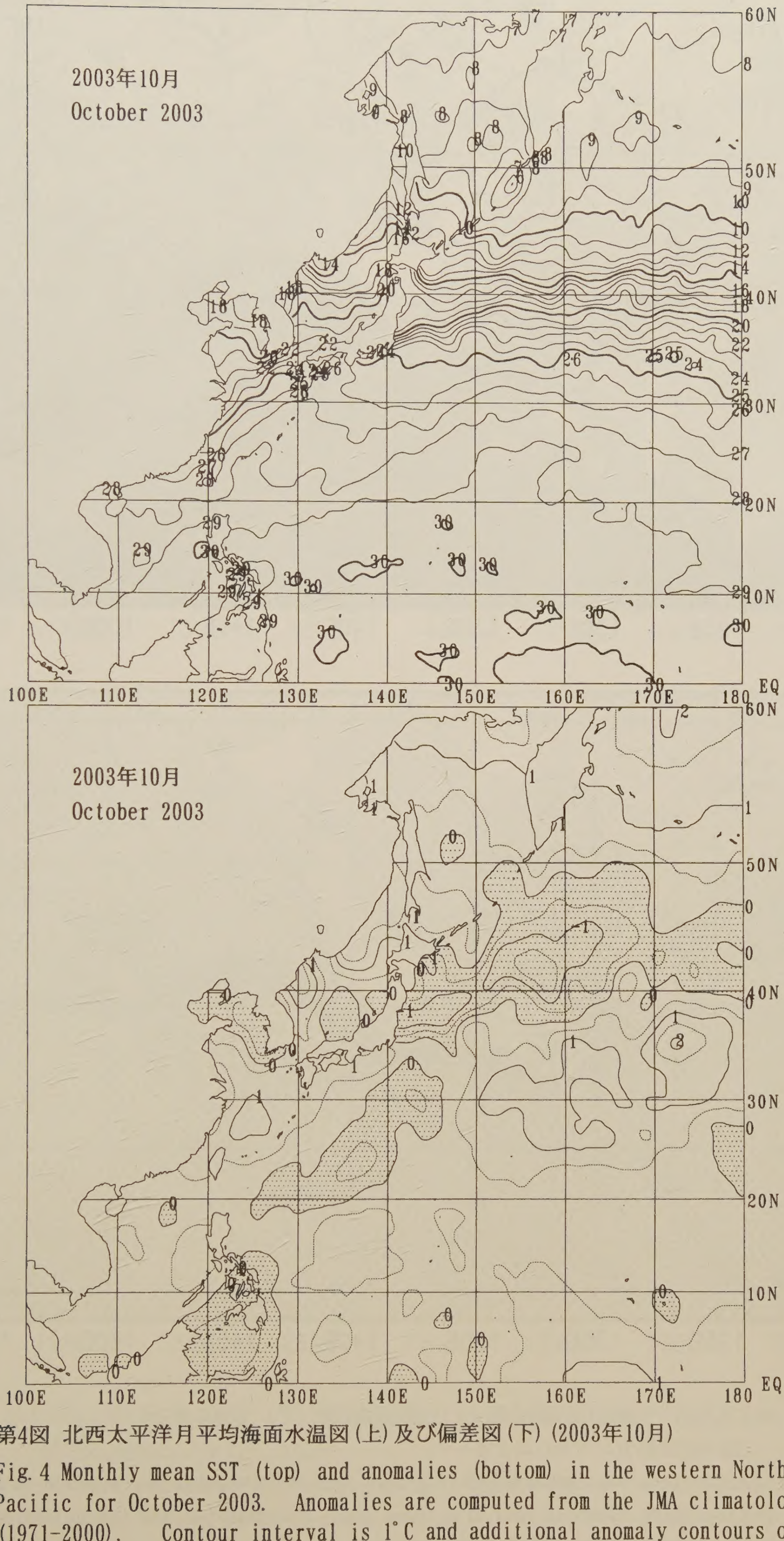
地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	25.4	-0.6
御前崎(47655)	19.8	-0.2
小名浜(47598)	17.0	-1.5
宮　古(47585)	16.9	-0.2
江　差(47428)	16.0	0.5
浜　田(47755)	20.9	0.3



第3図　北西太平洋旬平均海面水温図(上)及び偏差図(下)(2003年10月下旬)

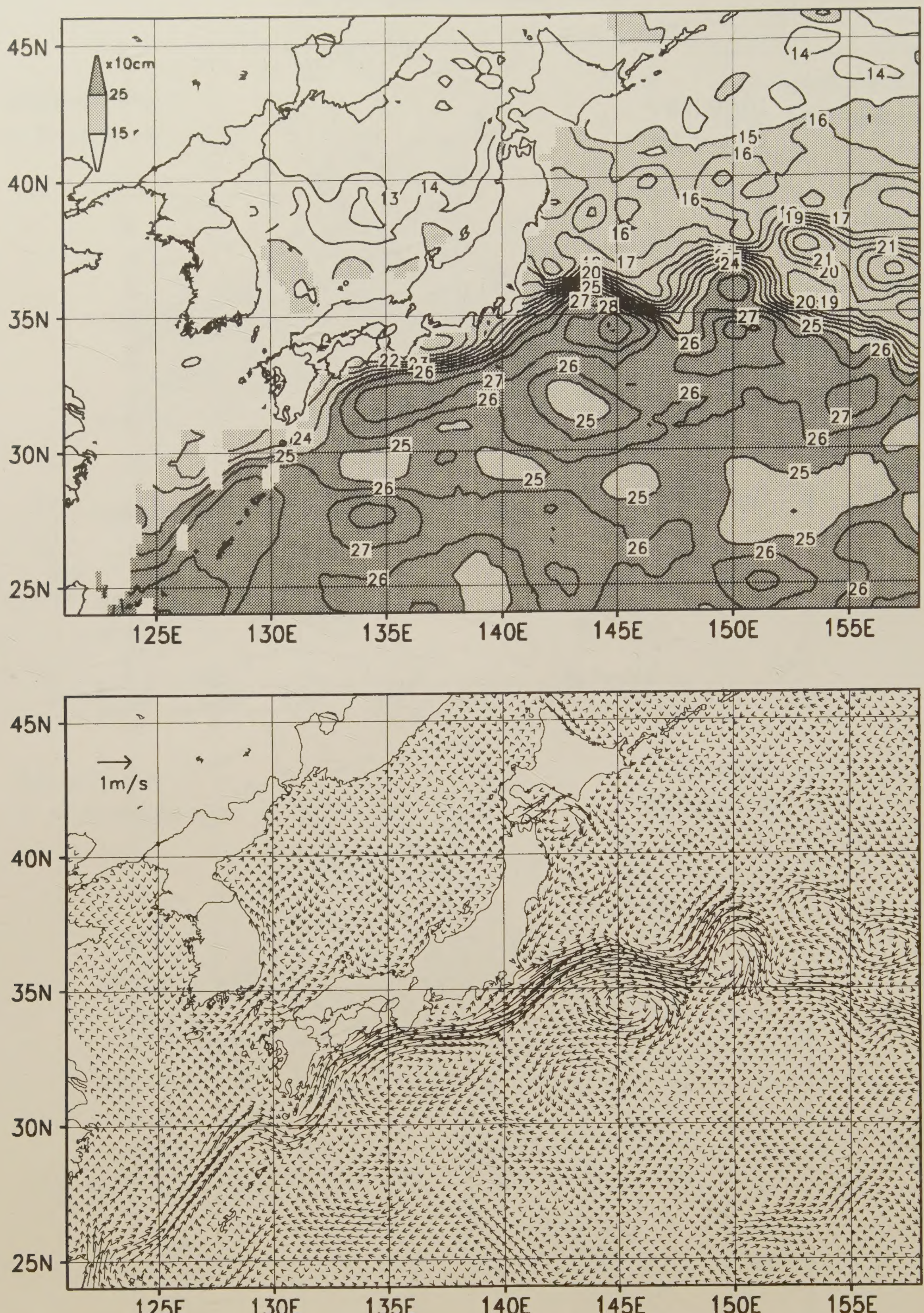
Fig. 3 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 3rd ten-day period in October 2003. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

Monthly Mean SST & Anomalies



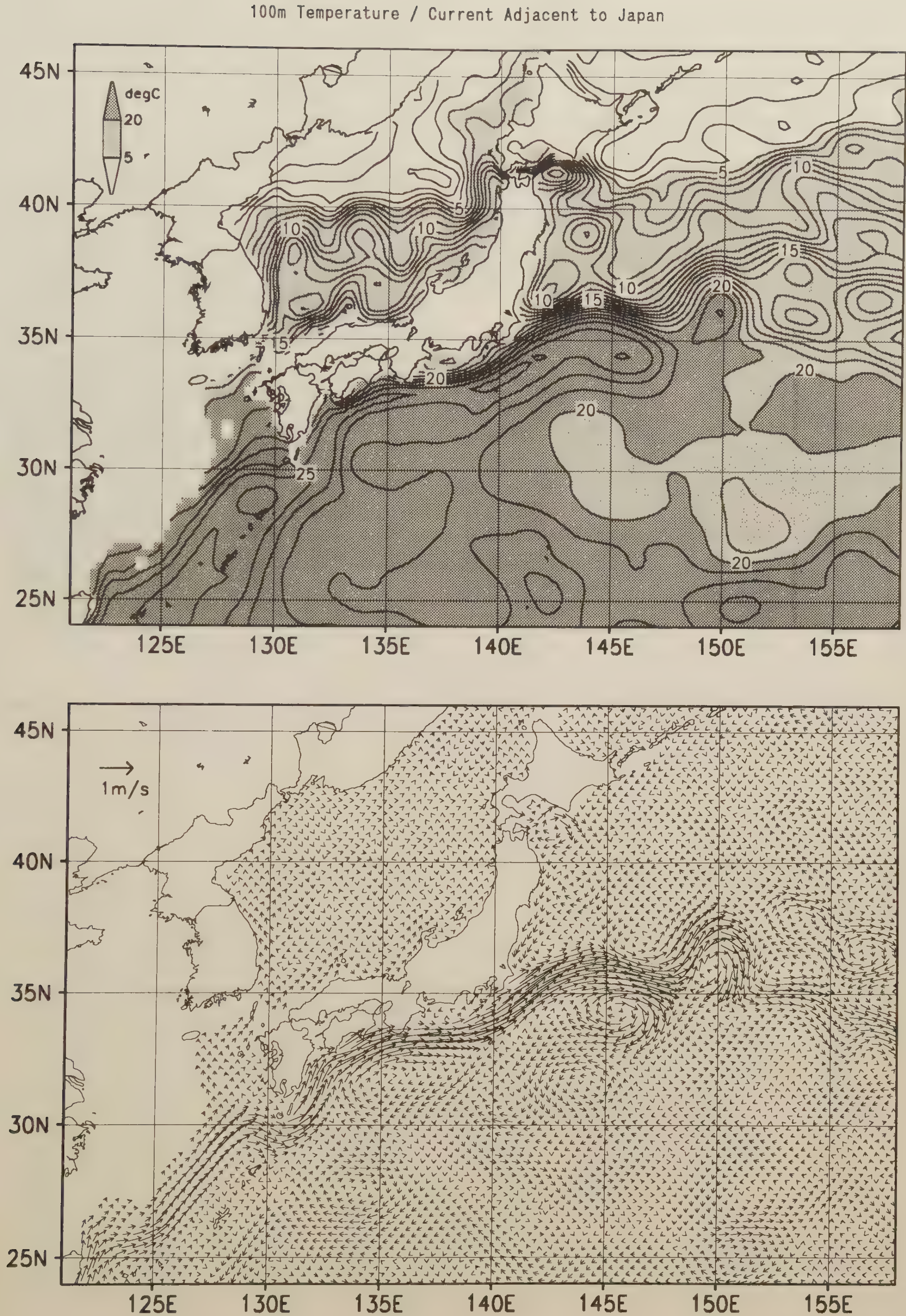
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Fig. 4 Monthly mean SST (top) and anomalies (bottom) in the western North Pacific for October 2003. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



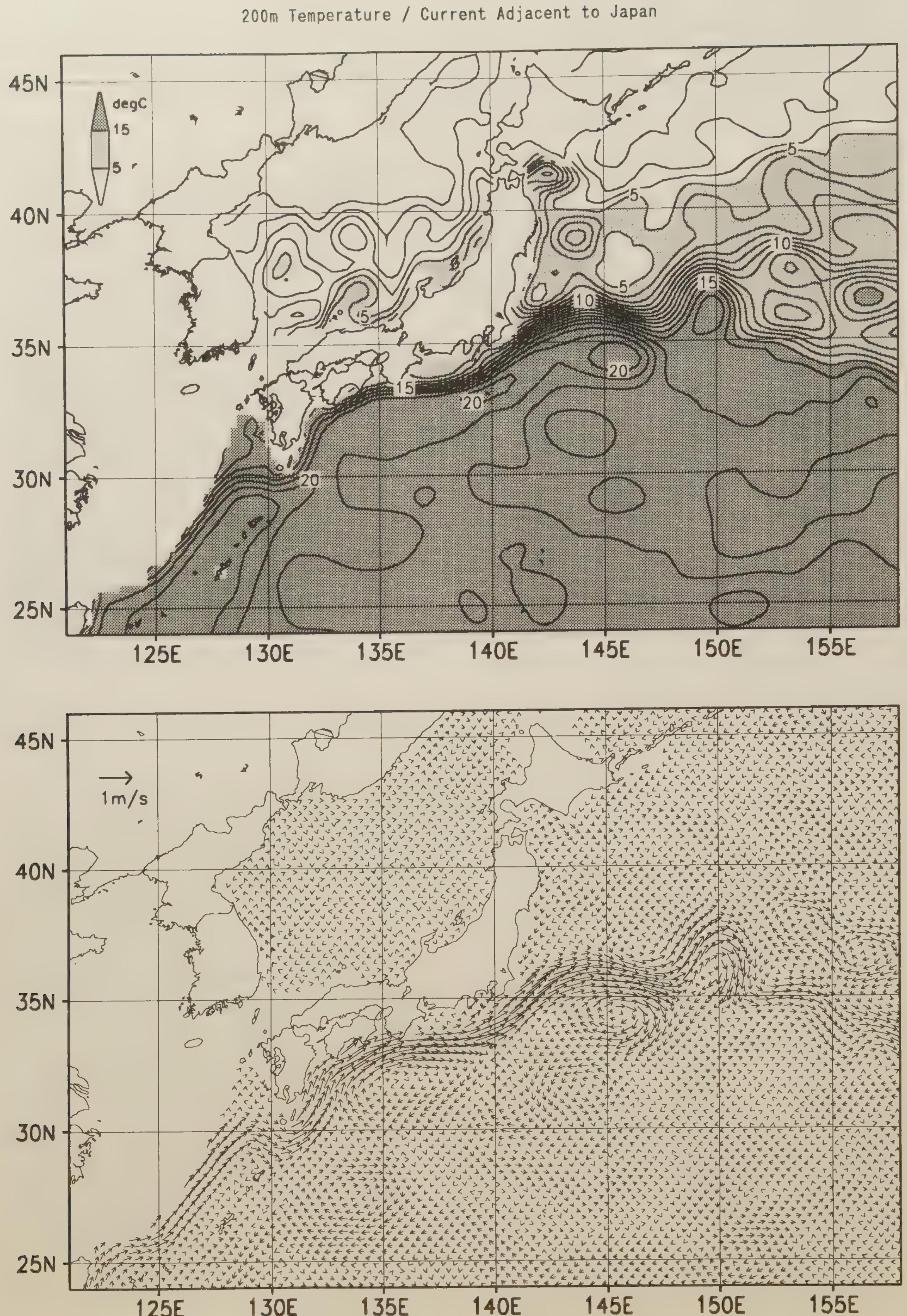
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Fig. 5　Monthly mean sea surface height (top) and current (bottom) in seas adjacent to Japan for October 2003. Contour interval is 10cm (top). (calculated by the Ocean Comprehensive Analysis System)



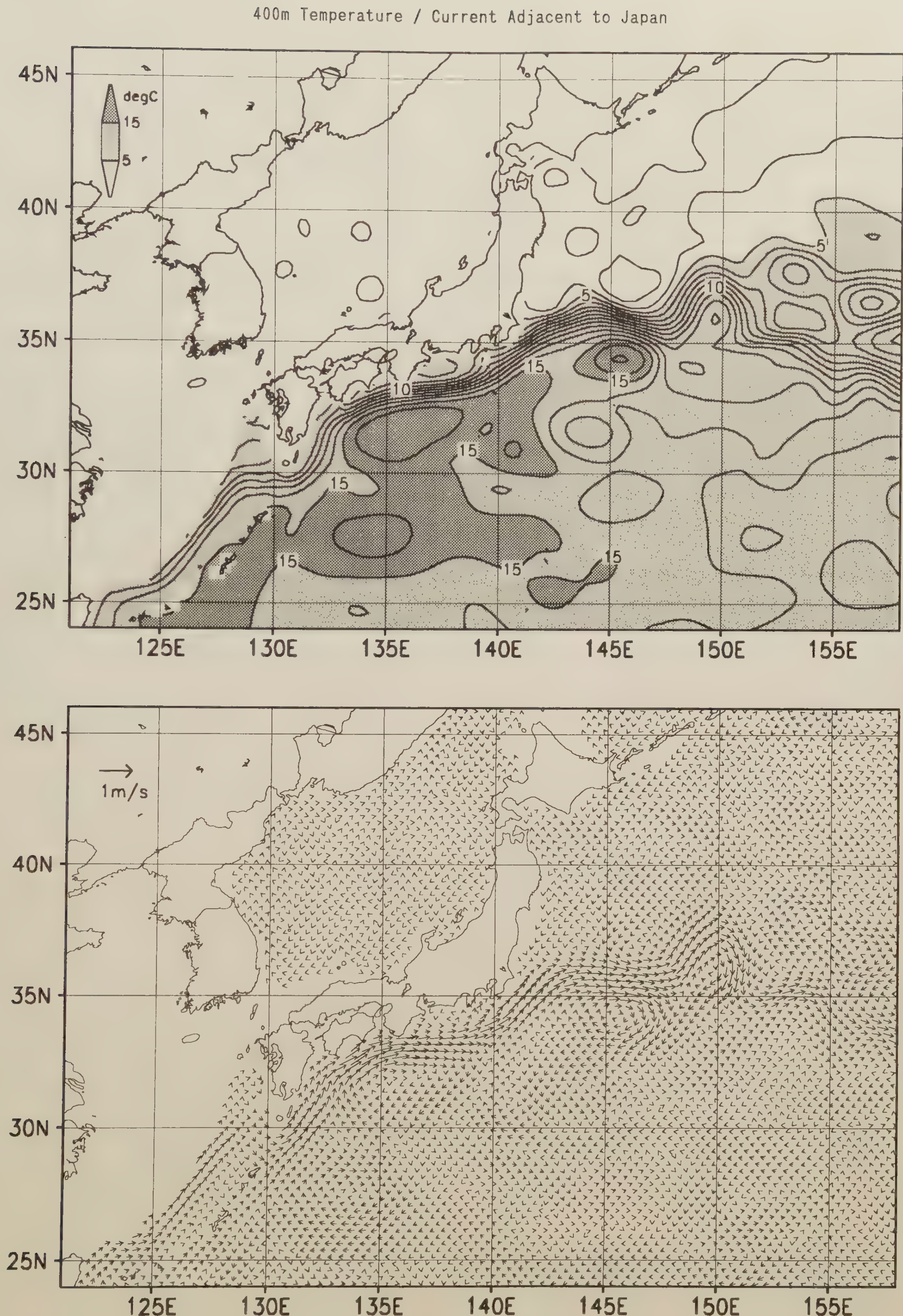
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Fig. 6　Monthly mean subsurface (100 m) temperature (top) and current (bottom) in seas adjacent to Japan for October 2003. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)



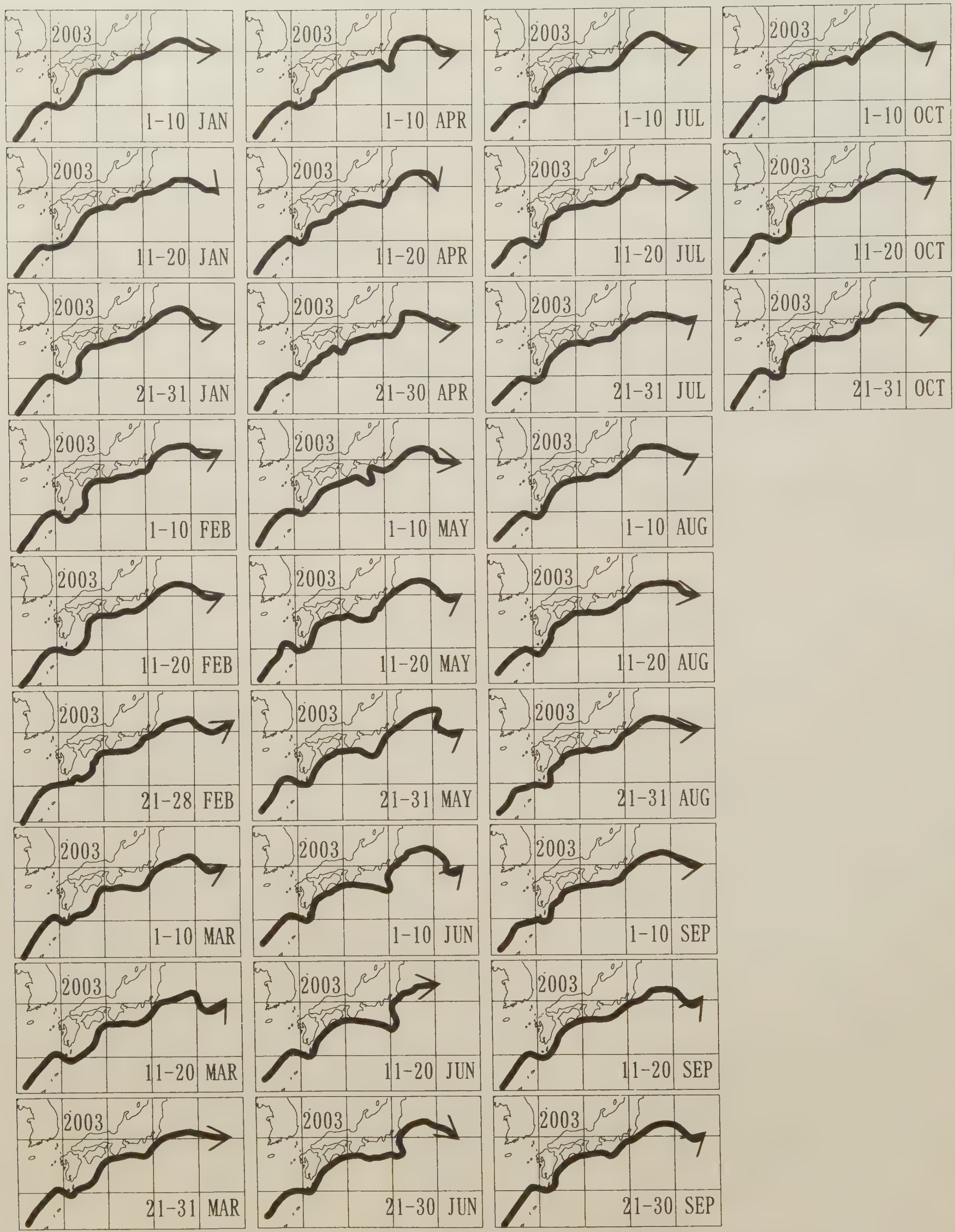
第７図　日本近海月平均表層水温図（上）と表層海流図（下）　（深さ 200 m）（2003 年 10 月）
（海洋総合解析システムによる）

Fig. 7　Monthly mean subsurface (200 m) temperature (top) and current (bottom) in seas adjacent to Japan for October 2003. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)



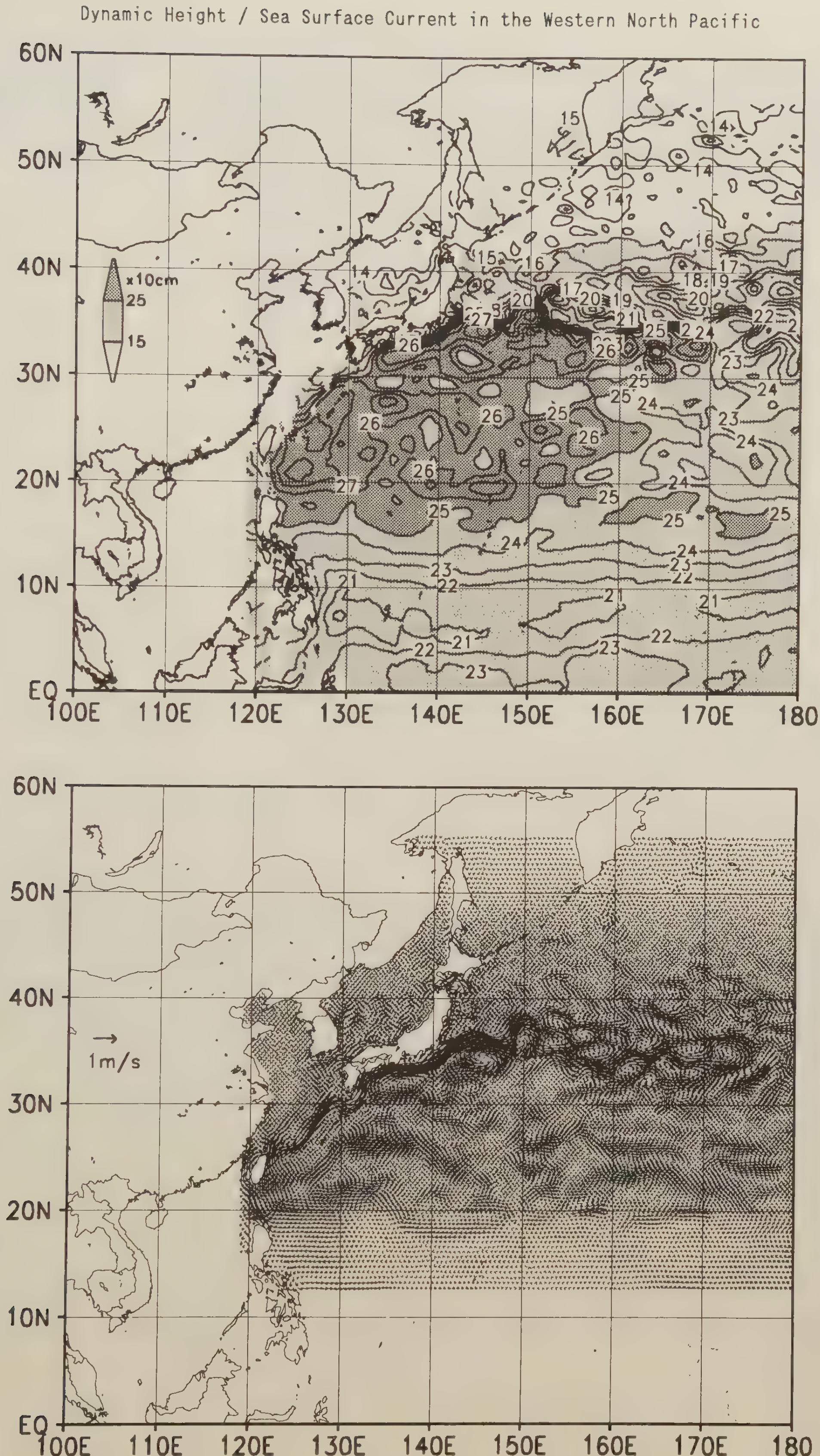
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Fig. 8　Monthly mean subsurface (400 m) temperature (top) and current (bottom) in seas adjacent to Japan for October 2003. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)



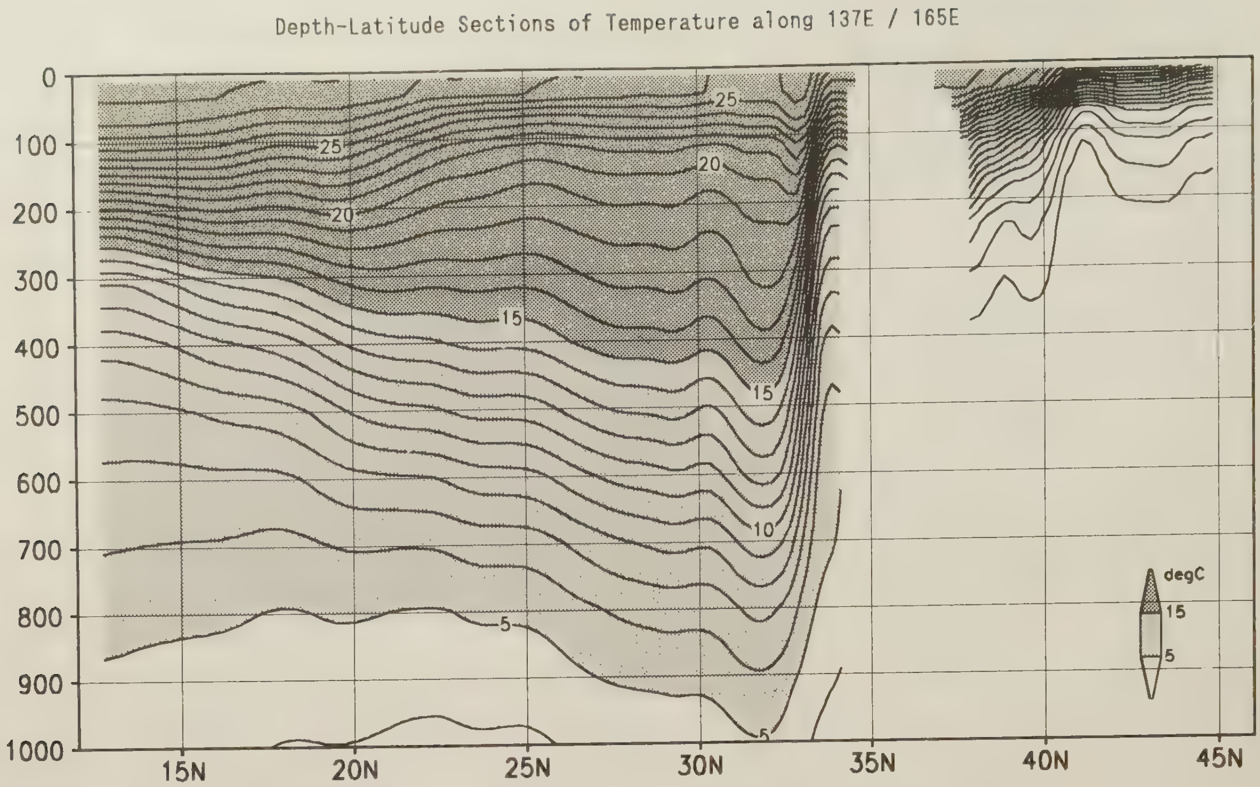
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Fig. 9 Location of the Kuroshio axis



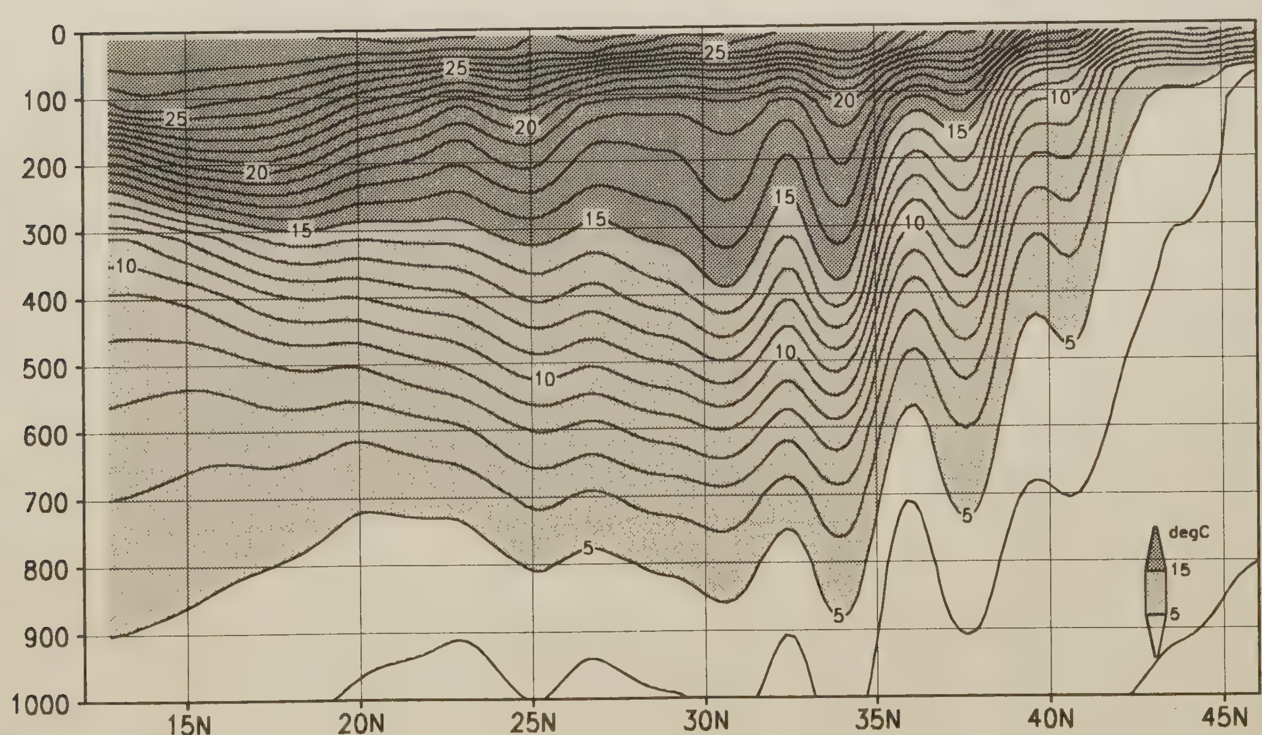
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(海洋総合解析システムによる)

Fig. 10　Monthly mean sea surface height (top) and current (bottom) in the western North Pacific for October 2003. Contour interval is 10cm (top). (calculated by the Ocean Comprehensive Analysis System)



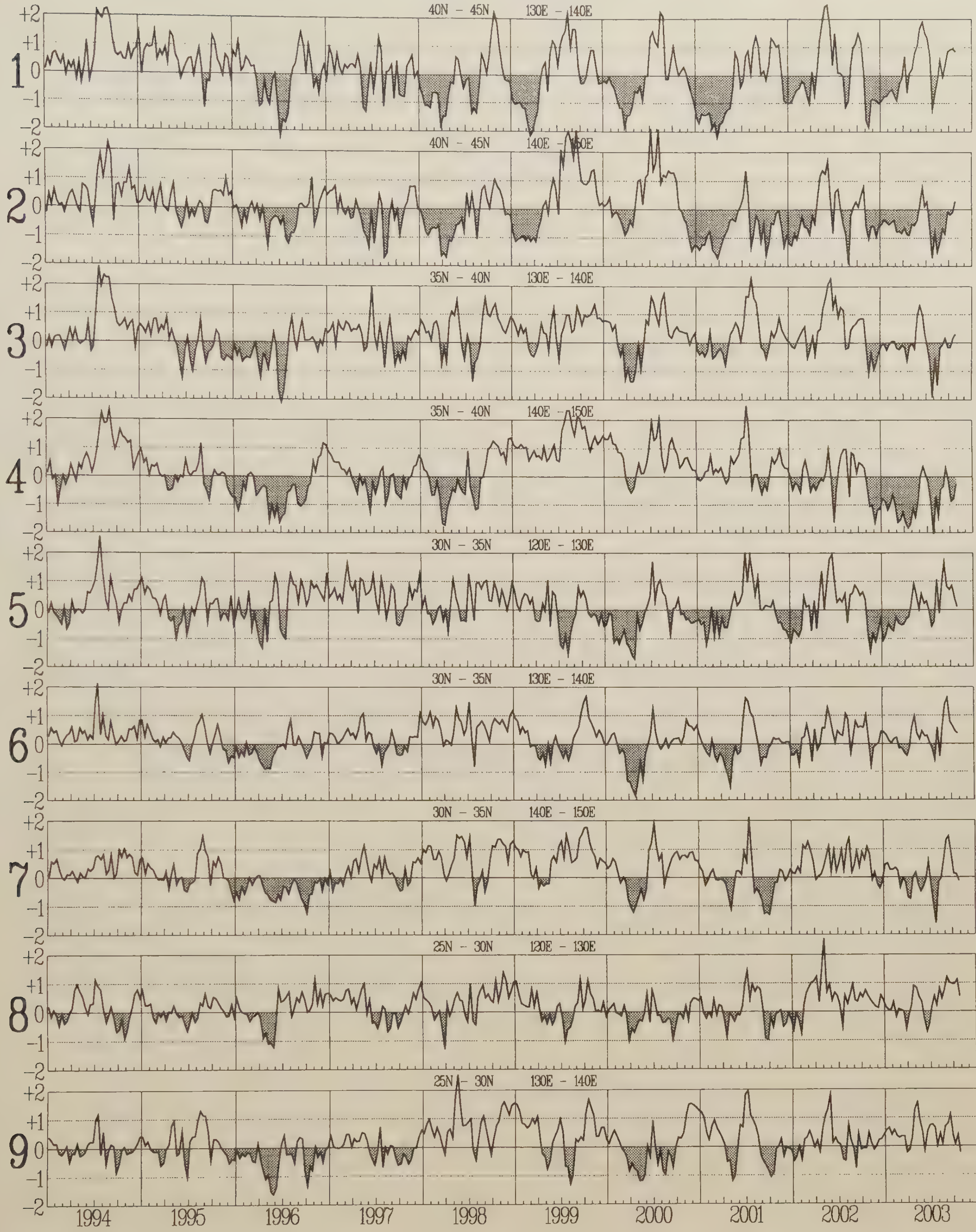
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（海洋総合解析システムによる）

Fig. 11　Vertical cross section of monthly mean temperature along 137 °E for October 2003. Contour interval is 1 °C. (calculated by the Ocean Comprehensive Analysis System)



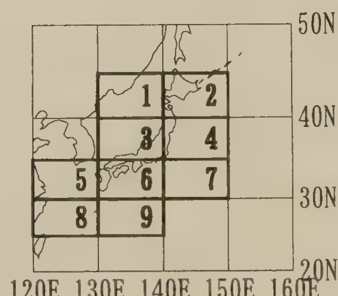
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（海洋総合解析システムによる）

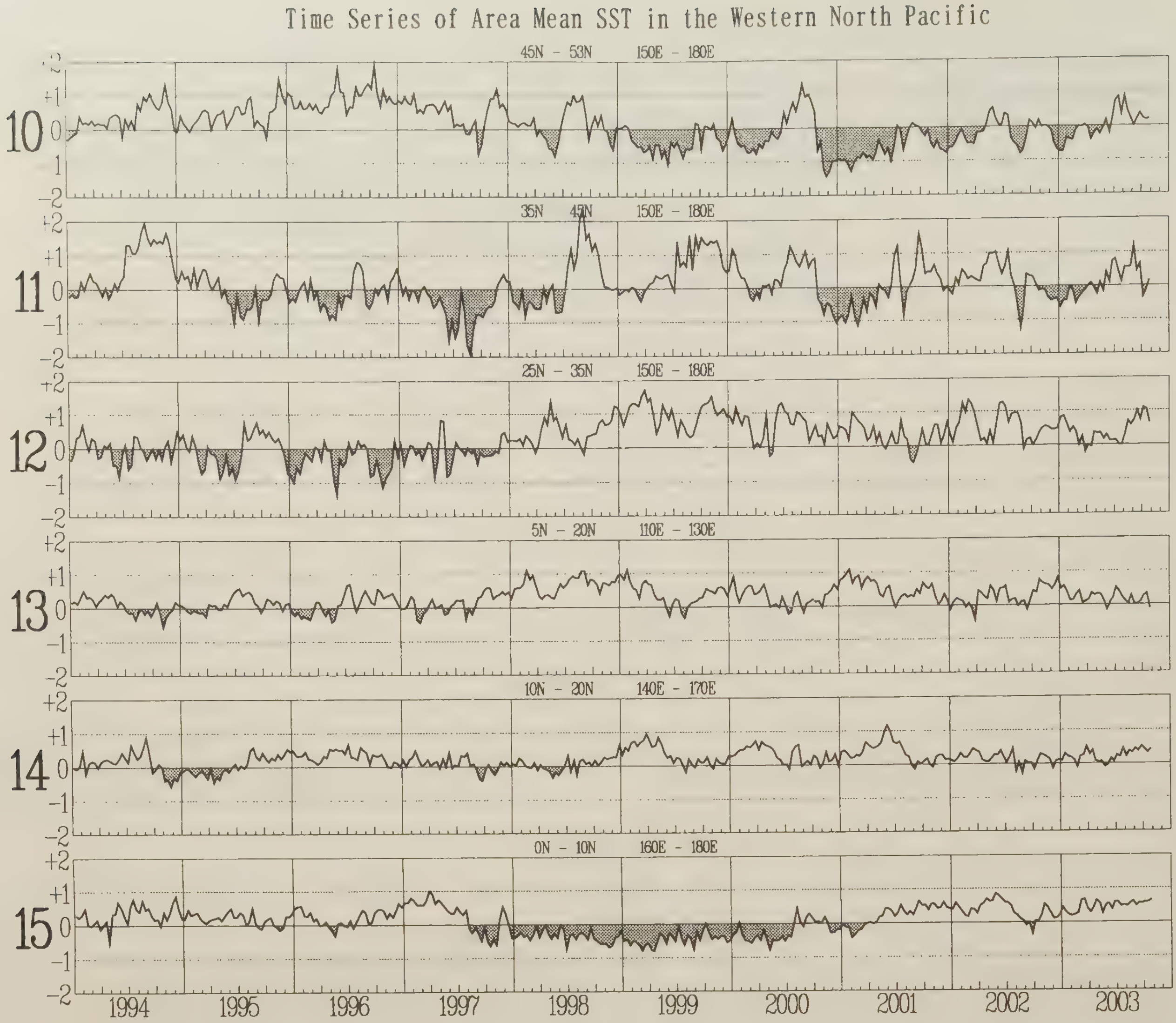
Fig. 12　Vertical cross section of monthly mean temperature along 165 °E for October 2003. Contour interval is 1 °C. (calculated by the Ocean Comprehensive Analysis System)

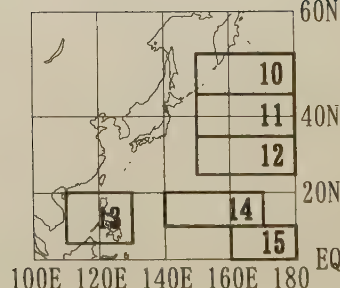


第13図　海域別旬平均海面水温平年偏差時系列図

Fig. 13 Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).

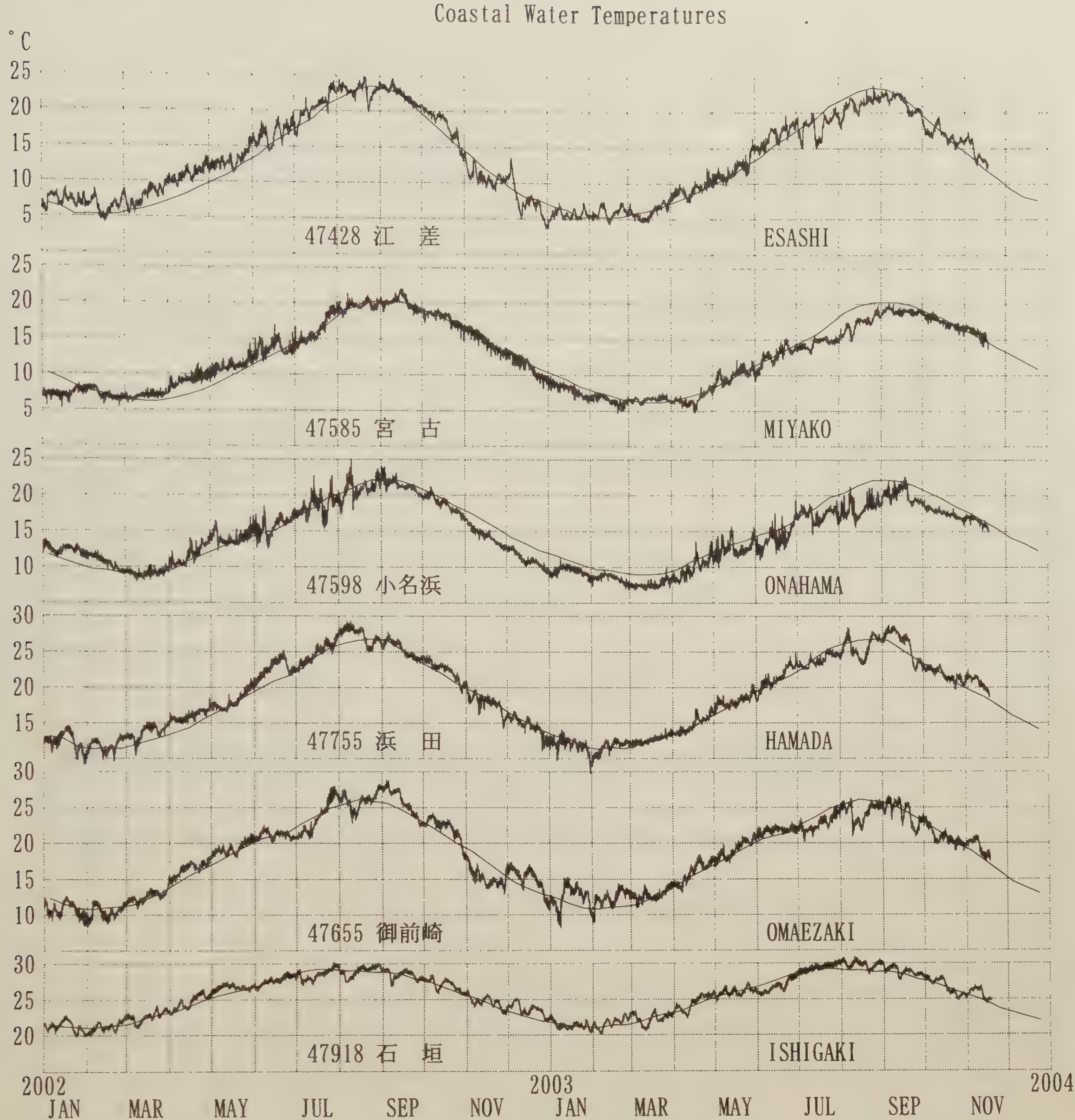






第13図　海域別旬平均海面水温平年偏差時系列図（つづき）

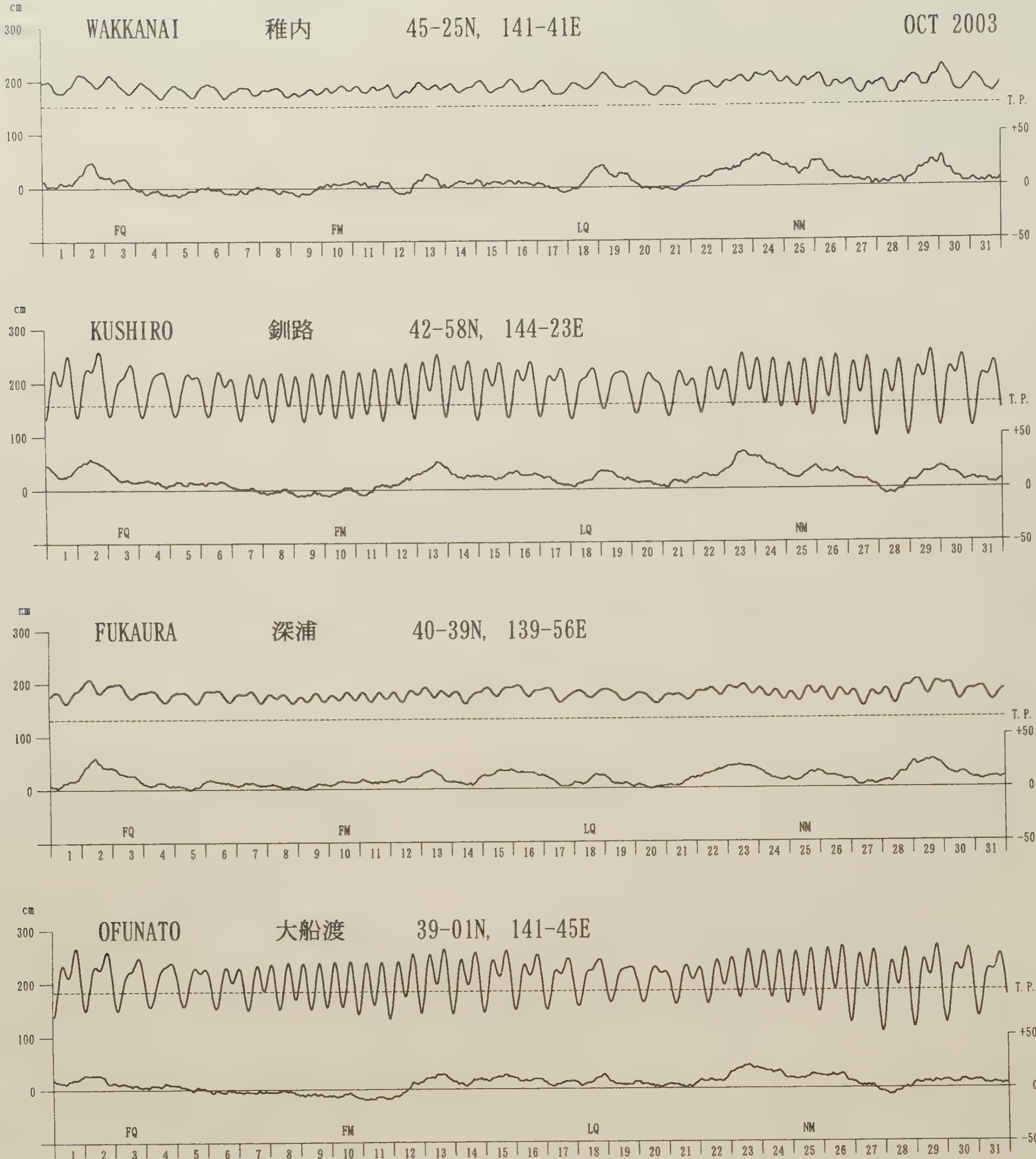
Fig. 13 (continue) Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).



第14図 沿岸水温時系列図

Fig. 14 Time series of hourly coastal water temperatures (°C) measured at 6 coastal stations of the JMA shown in the right panel.
Thin lines show ten-day mean climatology.

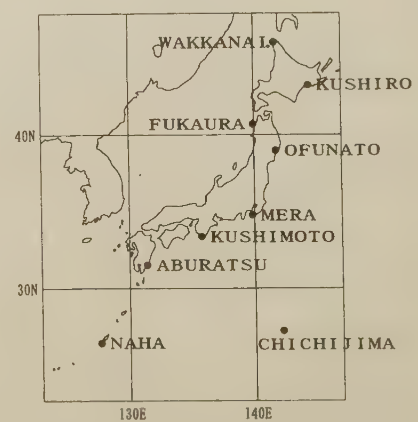




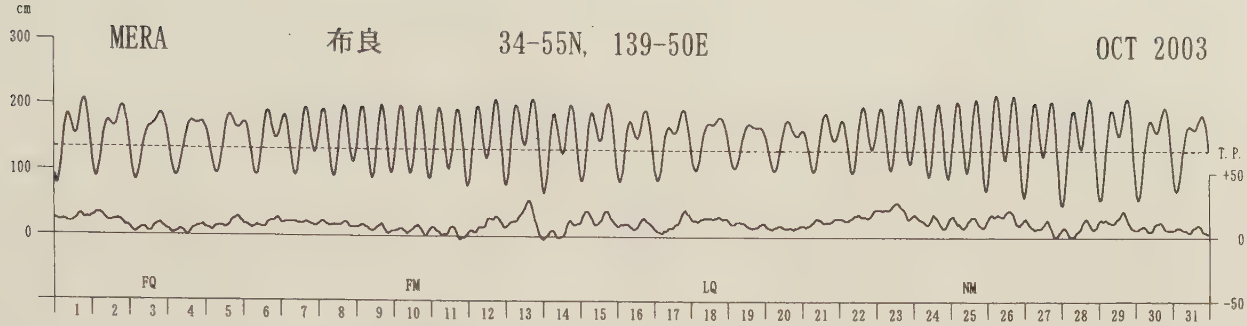
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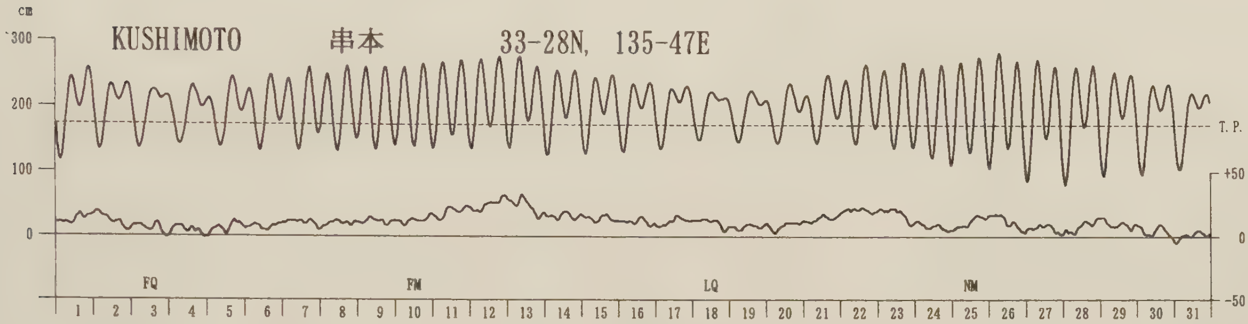
Fig. 15 Time series of hourly sea level observation (upper line) and its anomalies (lower line) at 9 stations of the JMA in the right panel.
Short term variations are removed from raw data.

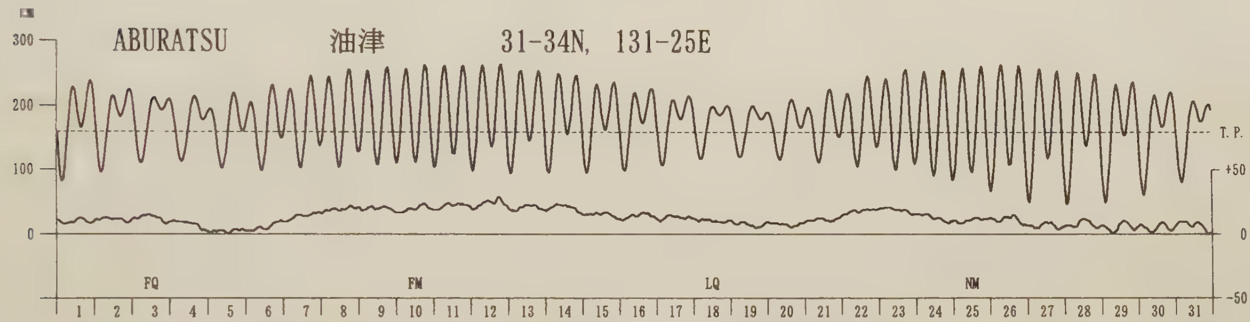
NM: new moon, FQ: first quarter
FM: full moon, LQ: last quarter
T. P. : Mean sea level of Tokyo Bay (Tokyo Peil)

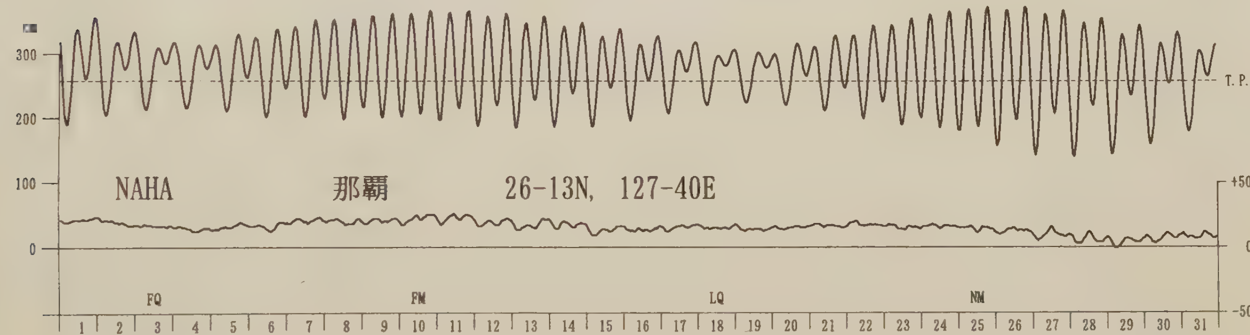


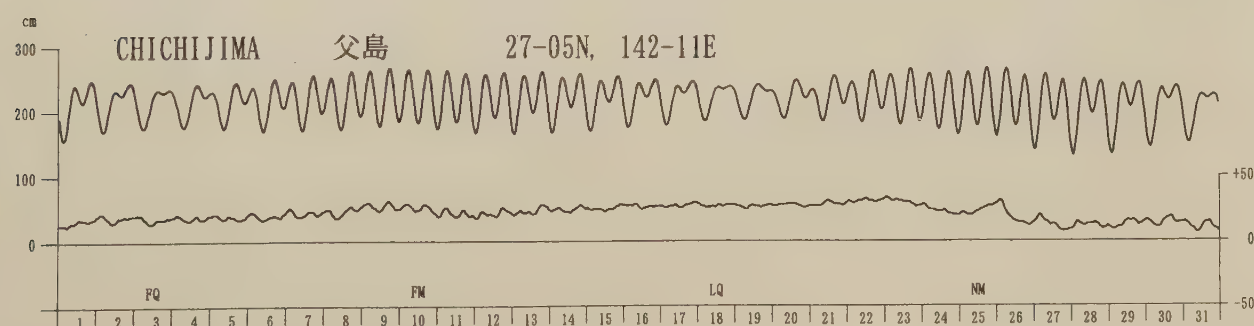
Time series of Sea Level





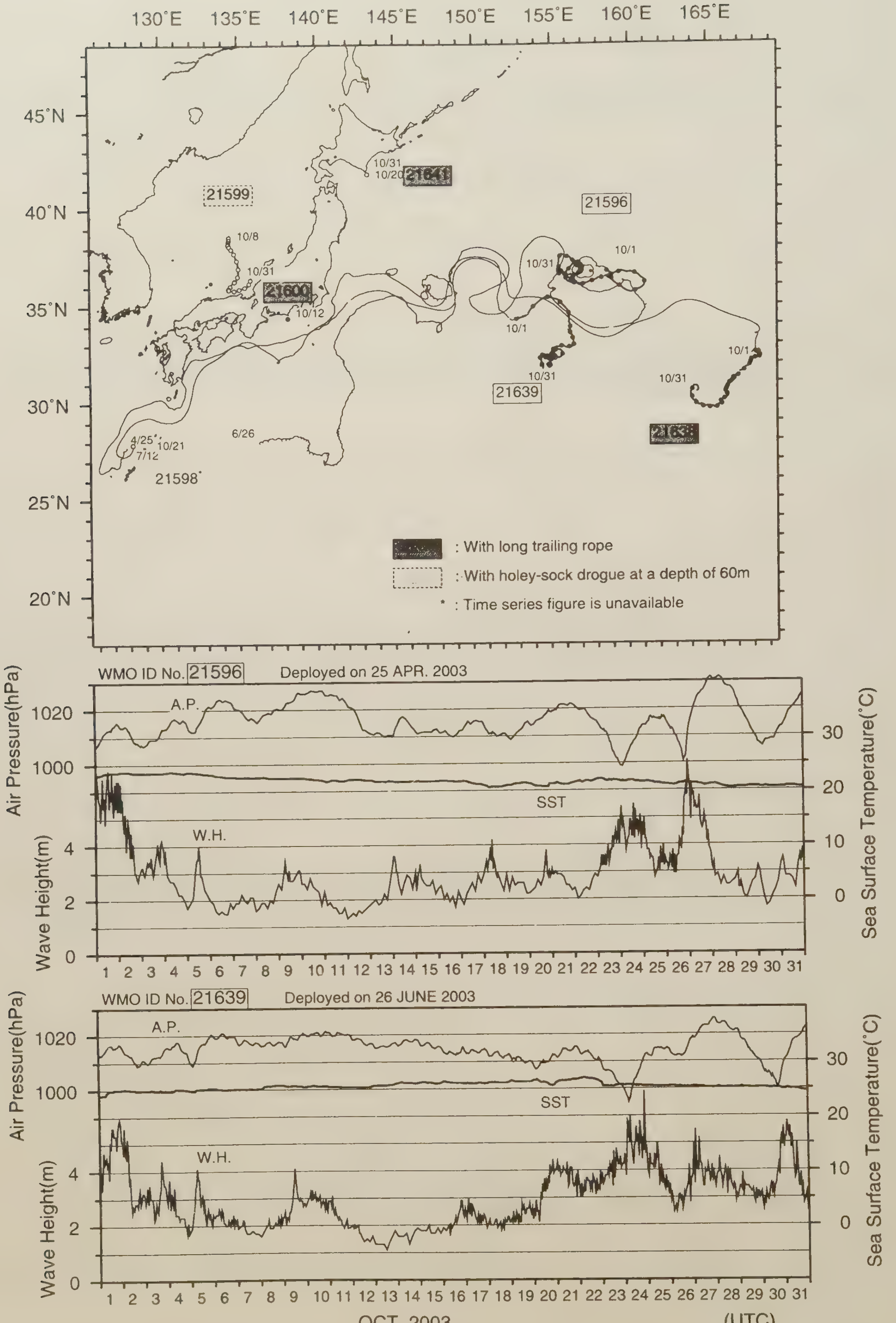






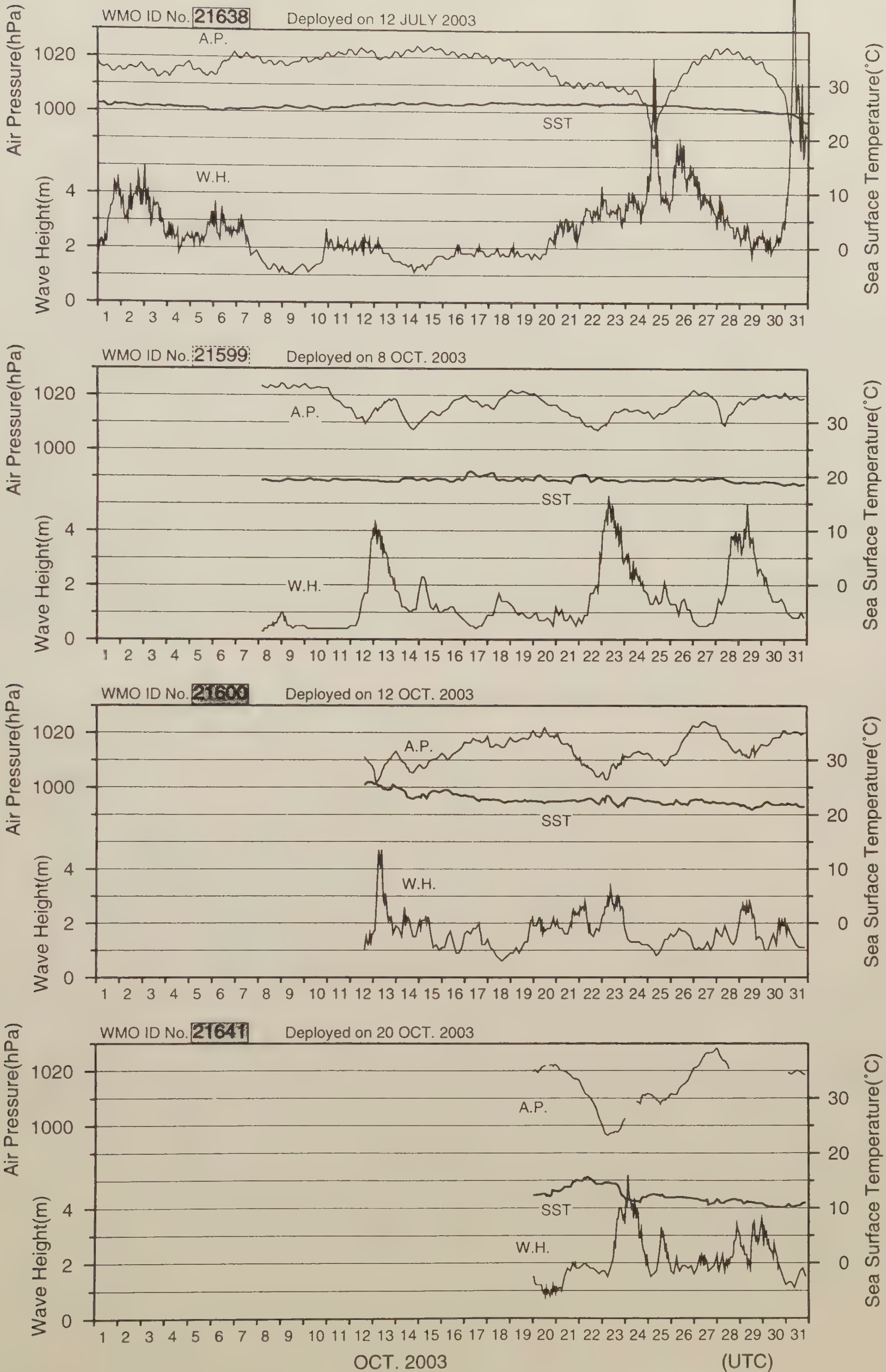
第15図 つづき

Fig. 15 continue



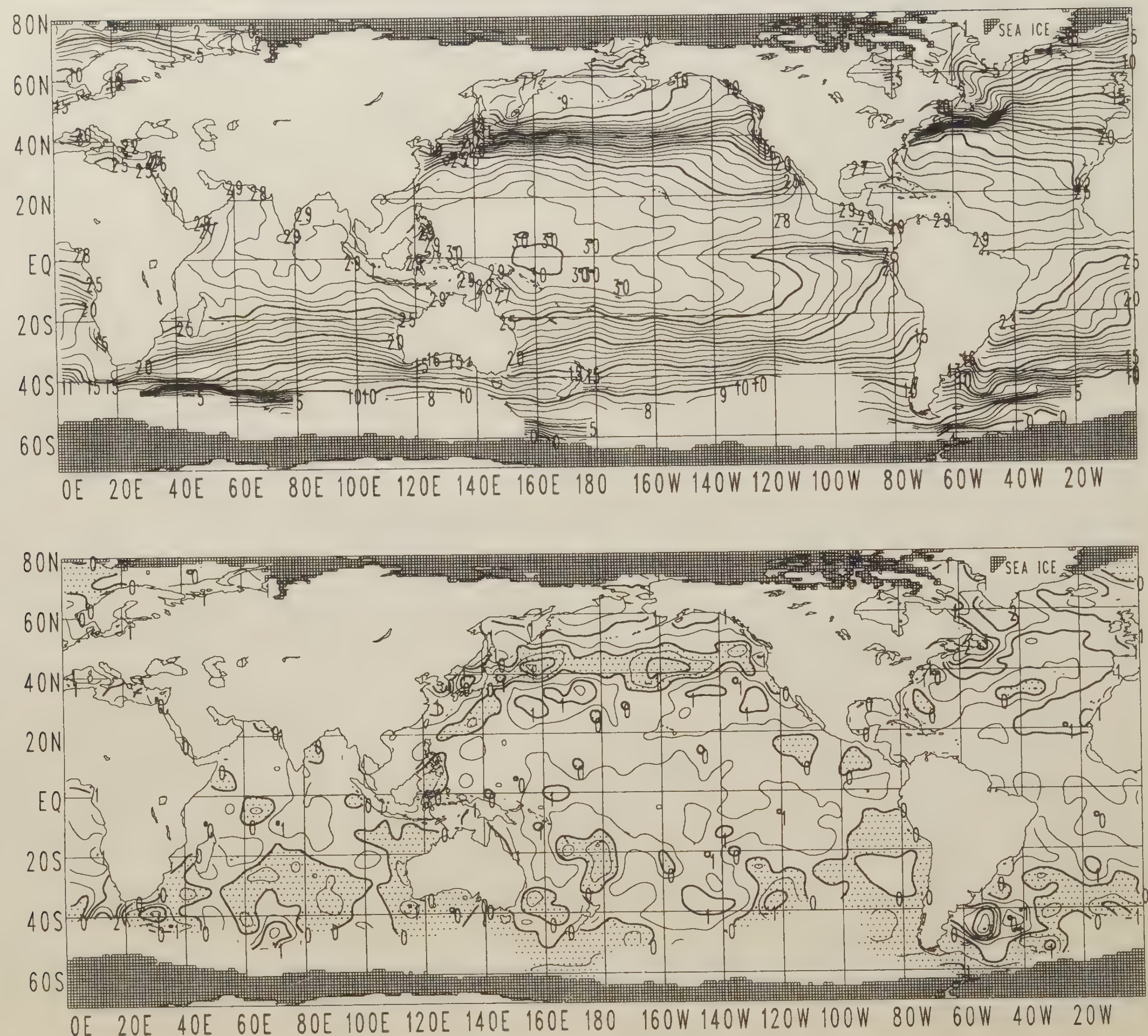
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Fig.16　Time series of JMA drifting buoy observation.
The upper panel shows paths of the buoys. Circles denote the position at 00h UTC everyday.
The lower panel shows time series of observation data.



第16図 つづき
Fig.16 continue

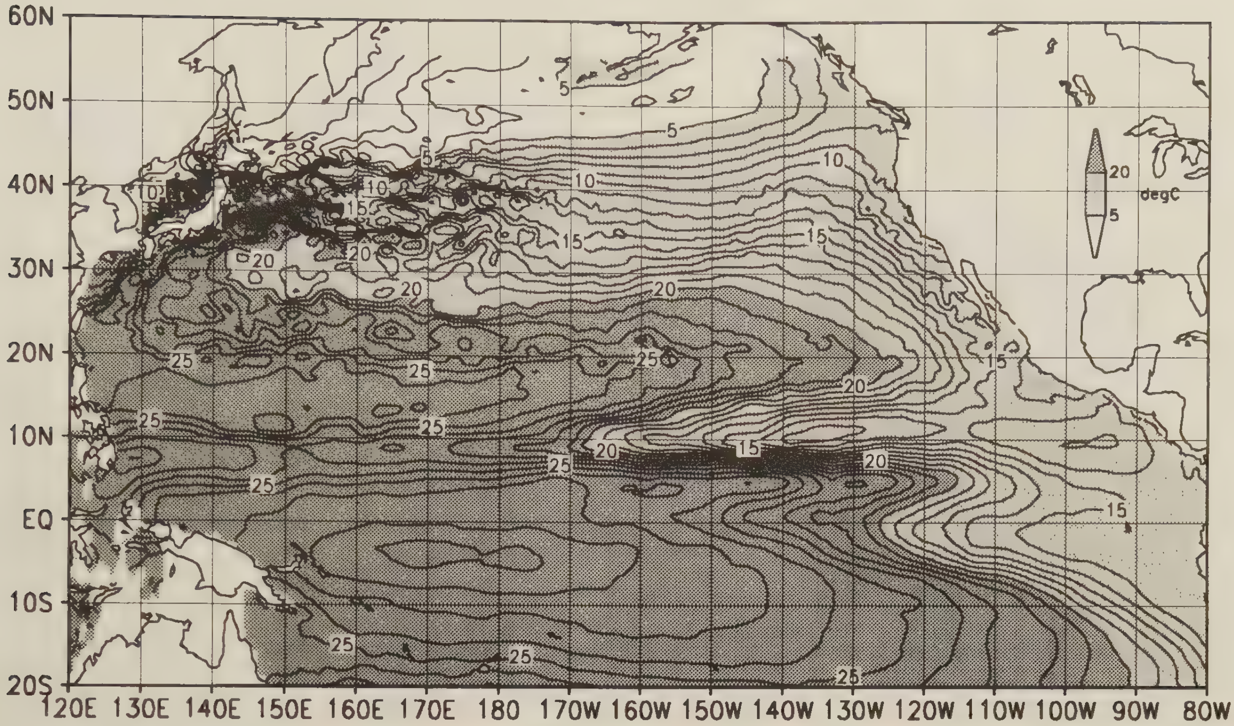
SST & Anomalies in the Global Ocean



第17図　全球月平均海面水温図（上）及び偏差図（下）（2003年10月）

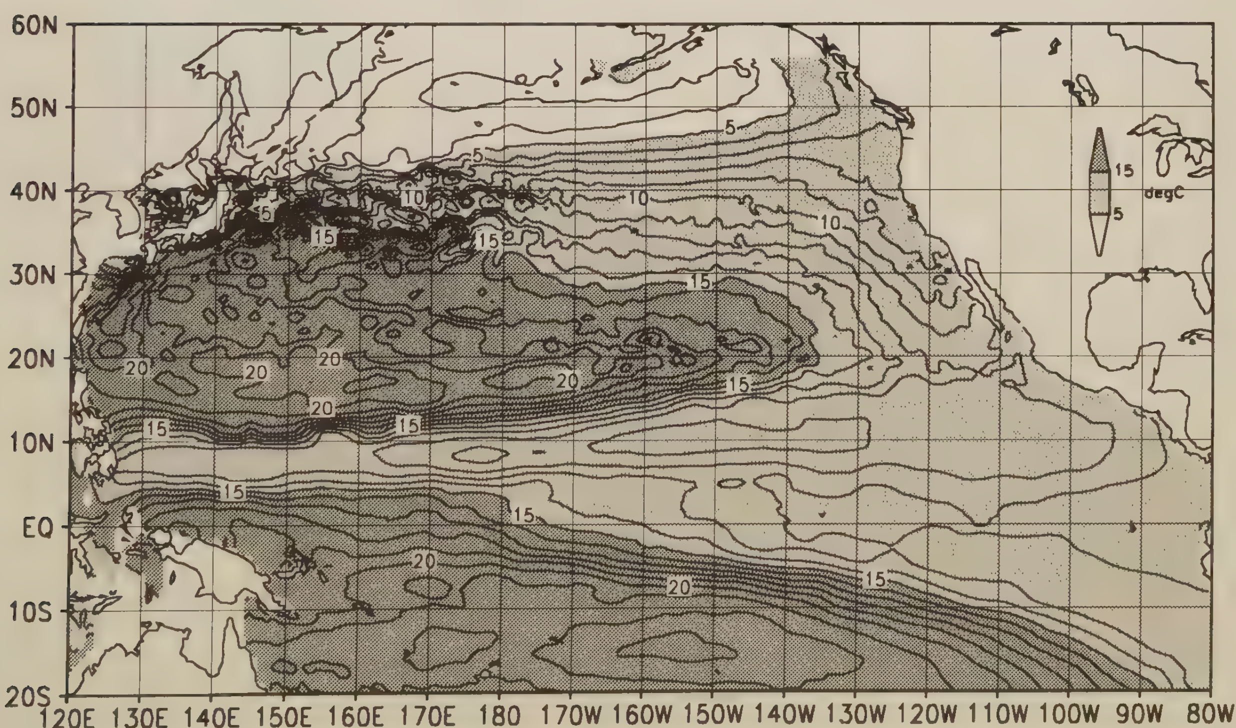
Fig. 17 Monthly mean SST over the global ocean (top) and anomalies (bottom) for October 2003. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C (top) and additional anomaly contours of ±0.5°C are shown by thin lines. Negative anomalies are spotted. Maximum coverage of sea ice is shaded. Data sources for sea ice are U.S. National Ice Center (polar regions) and JMA (the Sea of Okhotsk).

100m / 200m Temperature in the Pacific Ocean



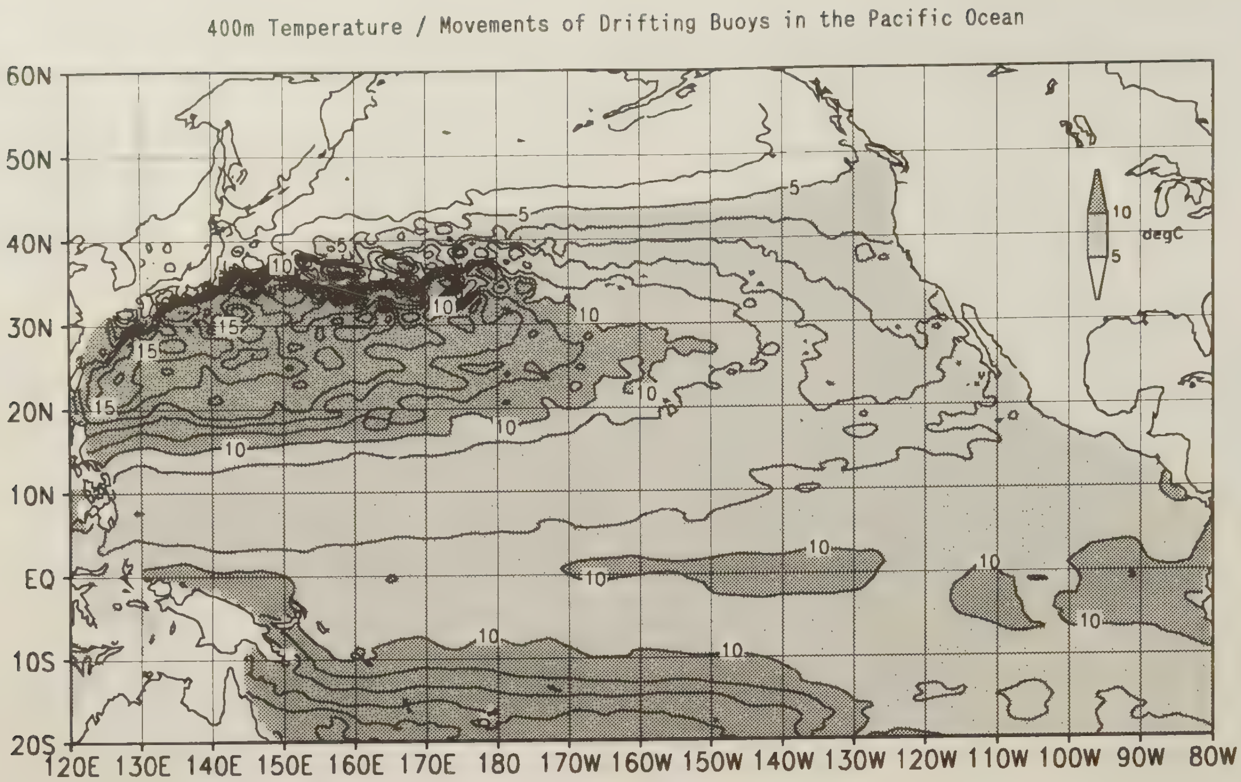
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（海洋総合解析システムによる）

Fig. 18　Monthly mean subsurface (100 m) temperature in the Pacific Ocean for October 2003. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



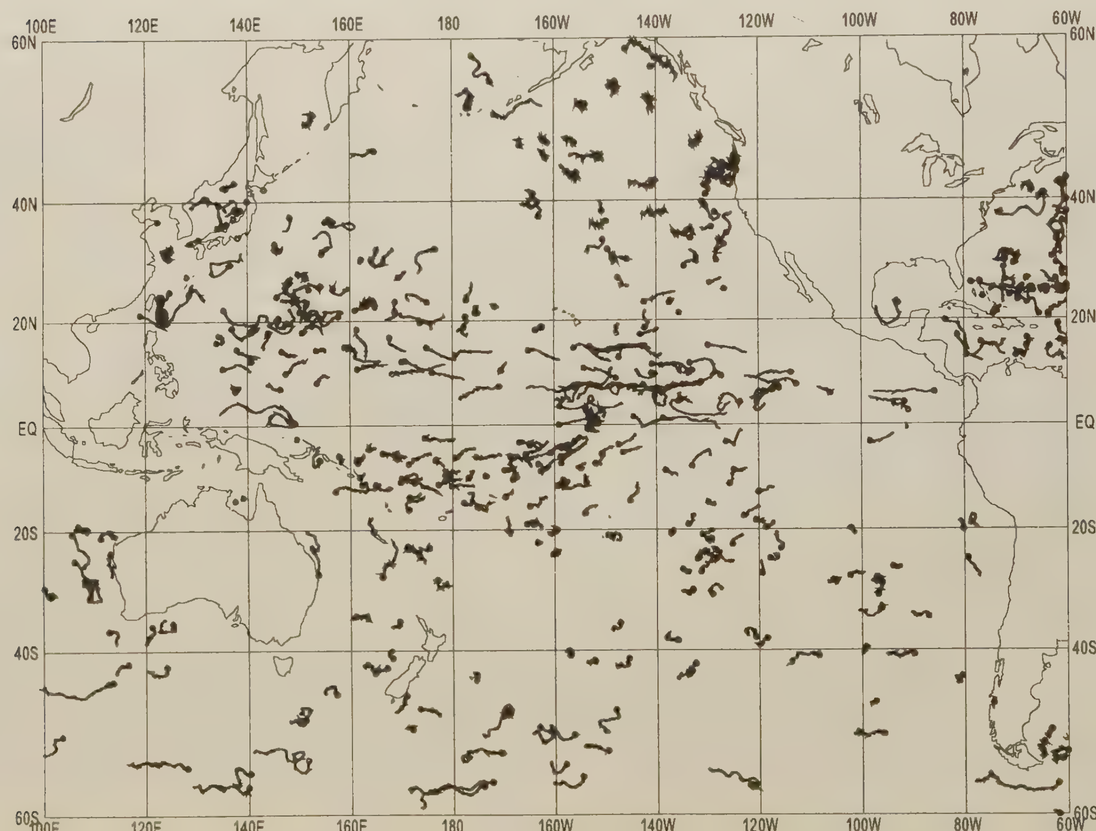
第 19 図　太平洋月平均表層水温図（深さ 200 m）（2003 年 10 月）
（海洋総合解析システムによる）

Fig. 19　Monthly mean subsurface (200 m) temperature in the Pacific Ocean for October 2003. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



第 20 図　太平洋月平均表層水温図（深さ 400 m）（2003 年 10 月）
（海洋総合解析システムによる）

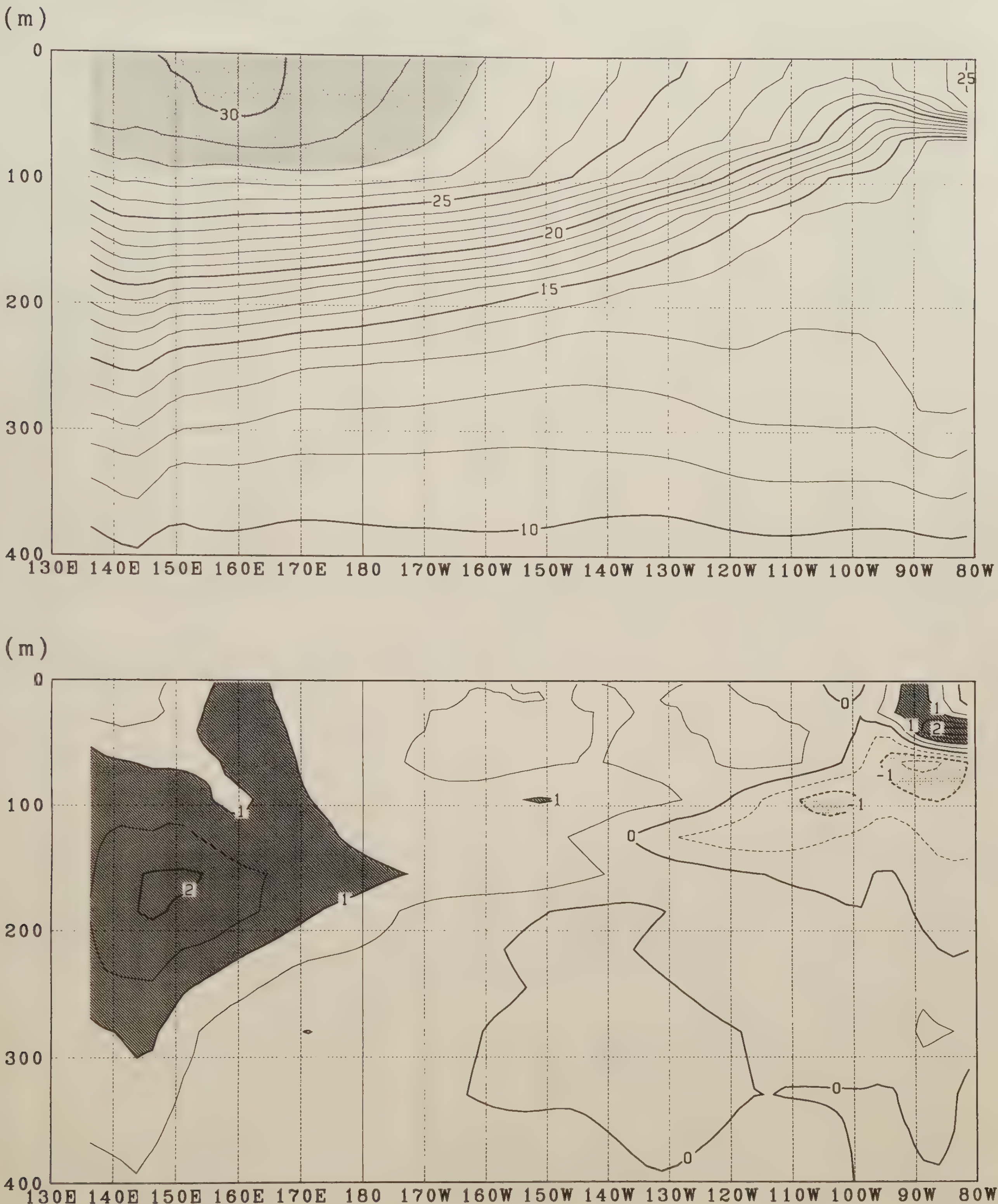
Fig. 20　Monthly mean subsurface (400 m) temperature in the Pacific Ocean for October 2003. Contour interval is 1 ˚C. (calculated by the Ocean Comprehensive Analysis System)



第 21 図　太平洋ブイ流跡図（2003 年 10 月）

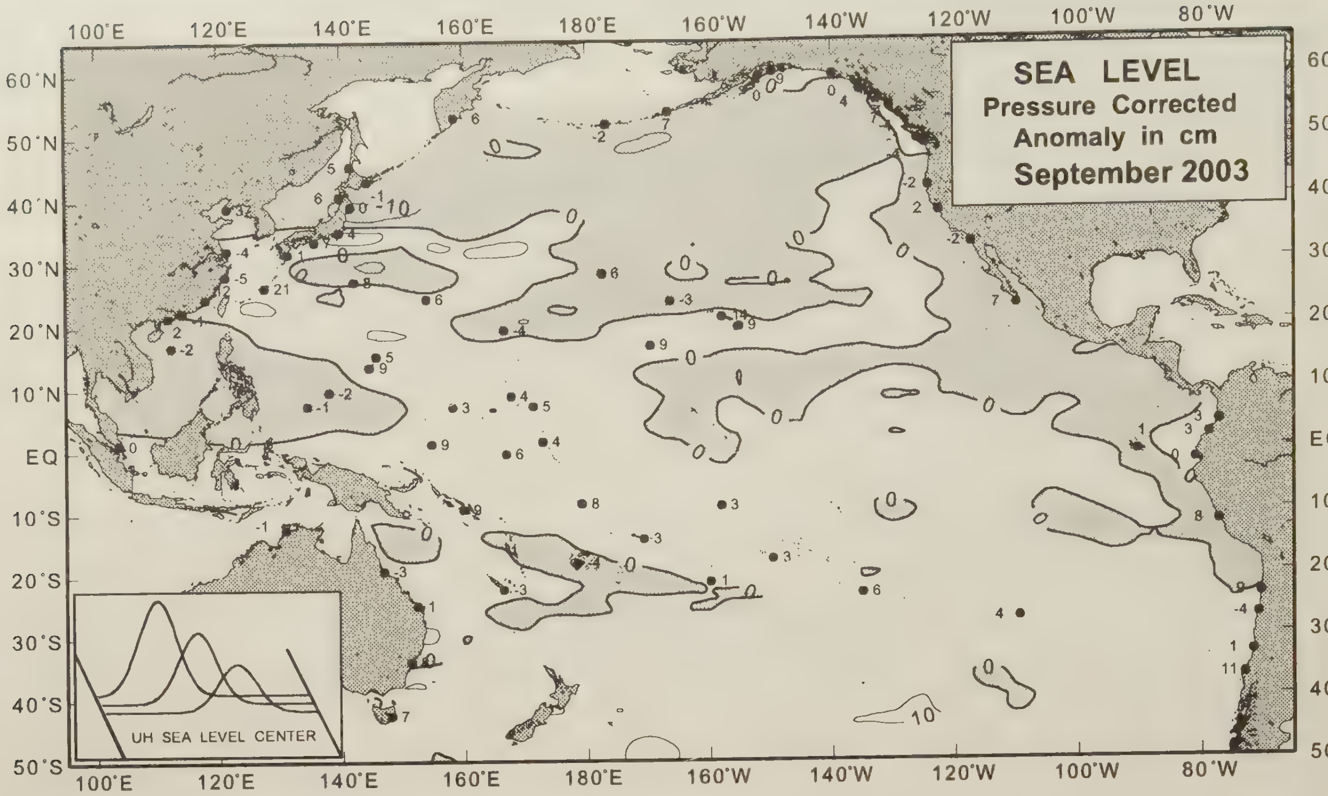
Fig. 21　Trajectories of drifting buoys in the Pacific Ocean during October 2003. Each track is for one buoy. Small circles represent the last positions for the month.

Depth-Longitude Sections of Equatorial Temperature & Anomalies



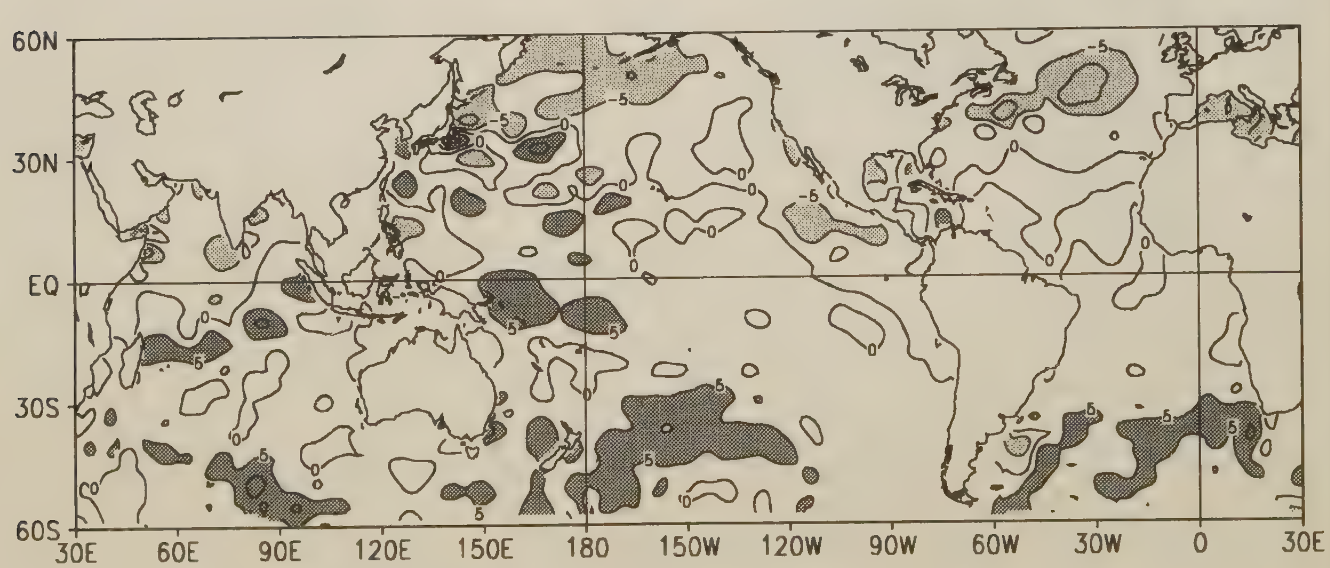
第22図　太平洋赤道に沿う表層水温（上）及び偏差（下）の深度－経度断面図（2003年10月）

Fig. 22 Depth-longitude sections of temperature (top) and anomalies (bottom) along the equator in the Pacific Ocean for October 2003. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (top) and 0.5°C (bottom). Values greater than 28°C in the top panel are shaded. In the bottom panel, values greater than 1°C are shaded and values less than -1°C are spotted. Anomalies are computed from 1987-2002 base period means.



第 23 図　太平洋月平均海面水位偏差図 (2003 年 9 月)

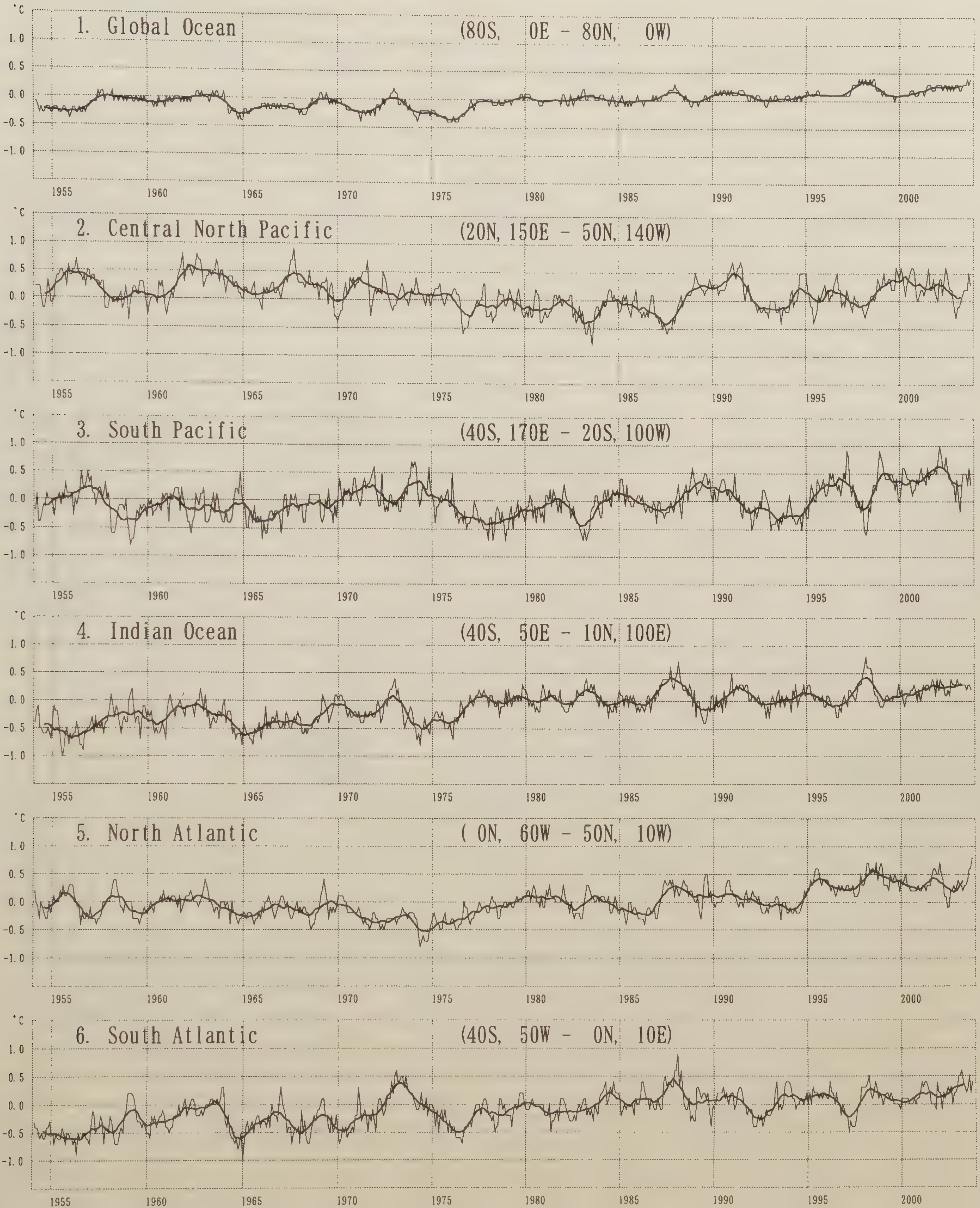
Fig. 23　Monthly sea level anomalies for September 2003 obtained from mean sea level (1993-2001) adjusted for atmospheric pressure. This figure is prepared by the SOC of ISLP-PAC, Department of Oceanography, University of Hawaii.



第 24 図　全球月平均海面高度偏差図 (2003 年 9 月)

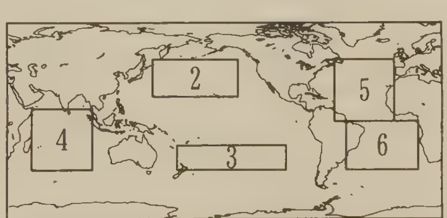
Fig. 24　Monthly sea surface height anomalies in the global ocean derived from the altimeter data of Jason-1 for September 2003. Contour interval is 5 cm. Positive anomalies exceeding +5 cm are shaded and negative anomalies exceeding -5 cm are spotted. Anomalies are computed from 1993-1998 base period means.

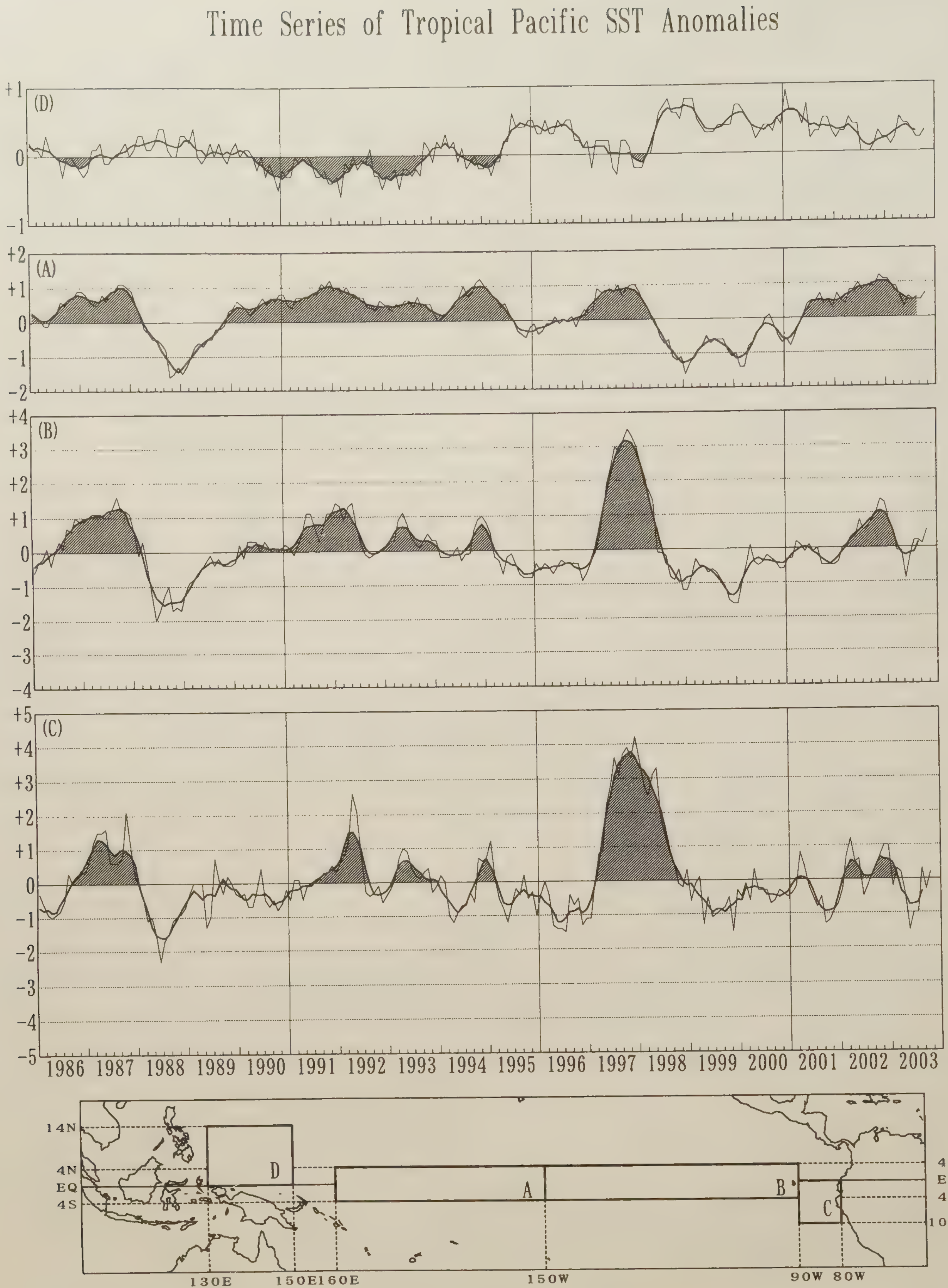
Long-term Variation of Monthly Mean SST Anomalies



第25図 海域平均海面水温偏差の長期変動

Fig. 25 Long-term variations of monthly mean sea surface temperature anomalies (°C) for the areas shown in the right panel. Anomalies are computed from the JMA climatology (1971-2000). Thin lines show the monthly mean and thick lines their 13-month running means.





第26図　太平洋熱帯域の海面水温偏差時系列図

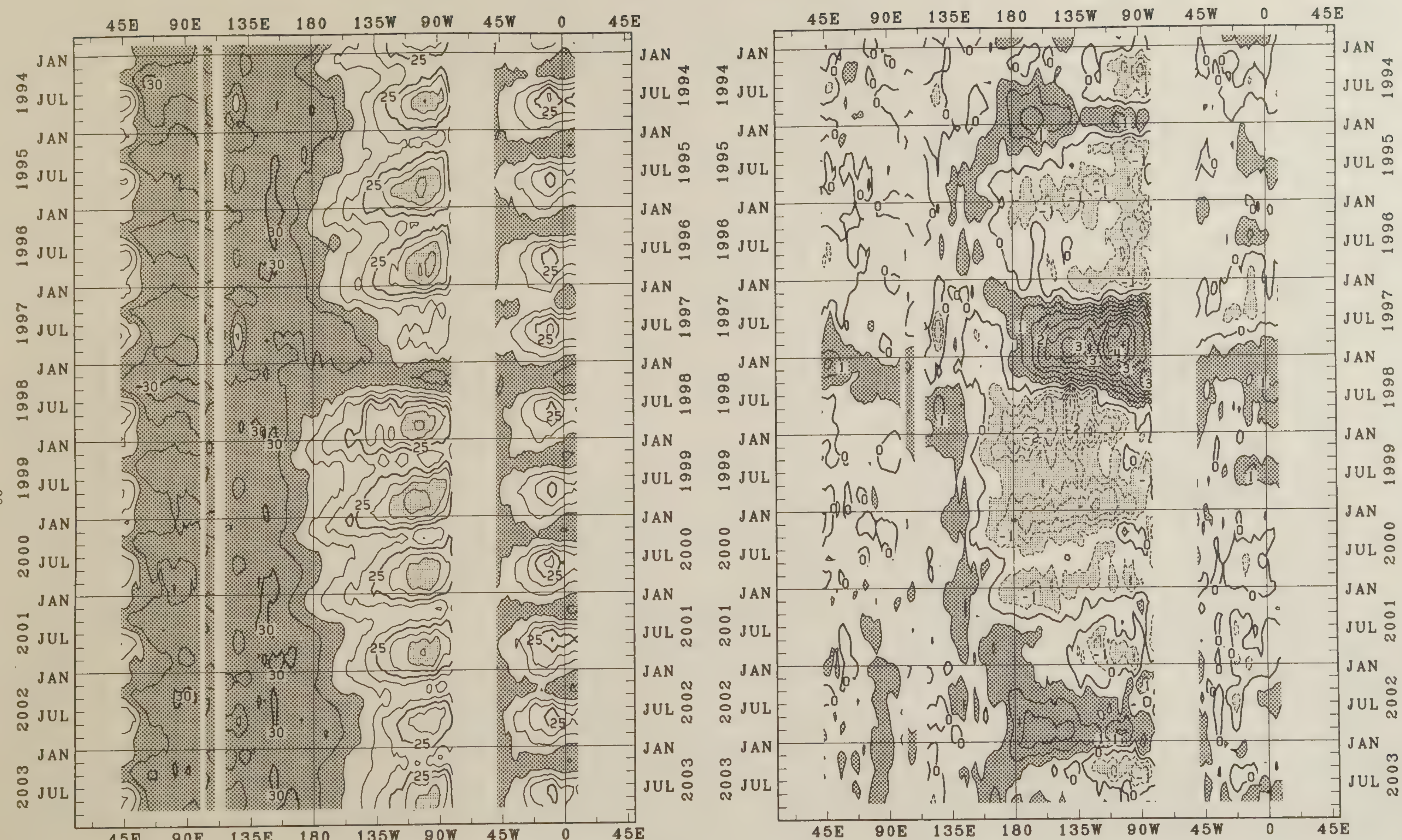
Fig. 26 Time series of monthly mean SST anomalies (°C) in the tropical Pacific Ocean for the areas indicated at the bottom panel. Thin lines show the monthly means and thick lines their 5-month running means. Positive anomalies (A, B, C) and negative anomalies (D) are shaded. Anomalies are computed from the JMA climatology (1971-2000).

Monitoring Indices in the Tropical Pacific

MONTH YEAR	SEA SURFACE TEMPERATURE AND ANOMALY (°C) REGION D 14N-EQ 130E-150E		REGION A 4N-4S 160E-150W		REGION B 4N-4S 150W-90W		REGION C EQ-10S 90W-80W		SOI	SEA LEVEL PRESSURE ANOMALY (hPa) TAHITI 17-33S 149-37W	DARWIN 12-24S 130-52E
JAN 01	29.4	0.9	27.4	-0.6	25.1	-0.3	24.1	-0.4	0.8	2.5	0.6
FEB 01	28.9	0.6	27.2	-0.8	26.0	-0.3	25.8	-0.2	1.0	-0.4	-3.2
MAR 01	29.1	0.6	27.6	-0.5	27.3	0.2	27.1	0.8	0.8	1.3	-0.2
APR 01	29.4	0.6	28.0	-0.2	27.3	0.1	25.8	0.4	0.1	-0.1	-0.3
MAY 01	29.7	0.4	28.7	0.1	26.8	-0.1	24.1	-0.2	-0.7	-0.2	0.9
JUN 01	30.1	0.7	28.9	0.4	26.3	0.1	22.4	-0.5	0.2	-0.2	-0.5
JUL 01	29.5	0.2	29.0	0.5	25.3	-0.1	21.1	-0.8	-0.2	-0.1	0.3
AUG 01	29.5	0.3	28.9	0.5	24.7	0.0	20.4	-0.5	-0.7	-0.9	0.1
SEP 01	29.6	0.3	29.1	0.7	24.2	-0.5	19.2	-1.3	0.1	-0.2	-0.4
OCT 01	29.9	0.5	28.8	0.4	24.2	-0.5	19.7	-1.2	-0.1	-0.9	-0.9
NOV 01	29.8	0.5	28.9	0.5	24.2	-0.5	20.9	-0.9	0.6	0.7	-0.4
DEC 01	29.3	0.3	28.5	0.3	24.5	-0.5	22.2	-0.7	-0.8	-1.2	0.3
JAN 02	28.7	0.2	28.7	0.7	25.0	-0.4	24.2	-0.3	0.3	1.3	0.7
FEB 02	28.6	0.3	28.5	0.5	26.3	0.0	26.7	0.7	0.7	1.5	-0.2
MAR 02	28.8	0.3	28.5	0.4	27.2	0.1	27.5	1.2	-0.2	0.4	1.0
APR 02	29.3	0.5	29.0	0.8	27.5	0.3	25.9	0.5	-0.1	0.1	0.3
MAY 02	29.7	0.4	29.4	0.8	27.2	0.3	24.9	0.6	-1.3	-1.1	0.7
JUN 02	29.8	0.4	29.5	1.0	27.0	0.8	22.4	-0.5	-0.4	-0.2	0.4
JUL 02	29.3	0.0	29.3	0.8	25.9	0.5	21.7	-0.2	-0.7	0.5	1.6
AUG 02	29.2	0.0	29.3	0.9	25.3	0.6	21.0	0.1	-1.2	-1.4	0.5
SEP 02	29.3	0.0	29.3	0.9	25.5	0.8	20.9	0.4	-0.5	-0.3	0.8
OCT 02	29.5	0.1	29.3	0.9	25.7	1.0	21.6	0.7	-0.5	-1.0	-0.3
NOV 02	29.6	0.3	29.6	1.2	26.1	1.4	22.8	1.0	-0.4	0.1	1.0
DEC 02	29.2	0.2	29.3	1.1	26.3	1.3	23.9	1.0	-1.0	-0.1	1.7
JAN 03	28.7	0.2	29.1	1.1	26.2	0.8	24.3	-0.2	-0.1	-0.1	0.2
FEB 03	28.4	0.1	28.9	0.9	26.8	0.5	26.3	0.3	-0.5	-1.5	-0.2
MAR 03	28.7	0.2	29.0	0.9	27.0	-0.1	26.5	0.2	-0.3	-0.2	0.5
APR 03	29.3	0.5	28.8	0.6	27.1	-0.1	24.9	-0.5	-0.1	0.5	0.8
MAY 03	29.7	0.4	28.9	0.3	26.0	-0.9	22.8	-1.5	-0.6	-0.7	0.2
JUN 03	29.8	0.4	29.1	0.6	25.9	-0.3	21.9	-1.0	-0.9	-0.9	0.4
JUL 03	29.6	0.3	29.0	0.5	25.6	0.2	20.9	-1.0	0.2	0.7	0.3
AUG 03	29.4	0.2	28.9	0.5	24.9	0.2	21.2	0.3	0.0	-0.2	-0.1
SEP 03	29.5	0.2	28.9	0.5	24.8	0.1	20.2	-0.3	-0.1	-0.3	0.0
OCT 03	29.7	0.3	29.1	0.7	25.2	0.5	21.1	0.2	-0.1	-0.5	-0.4

第1表　太平洋熱帯域の大気及び海洋の監視指数

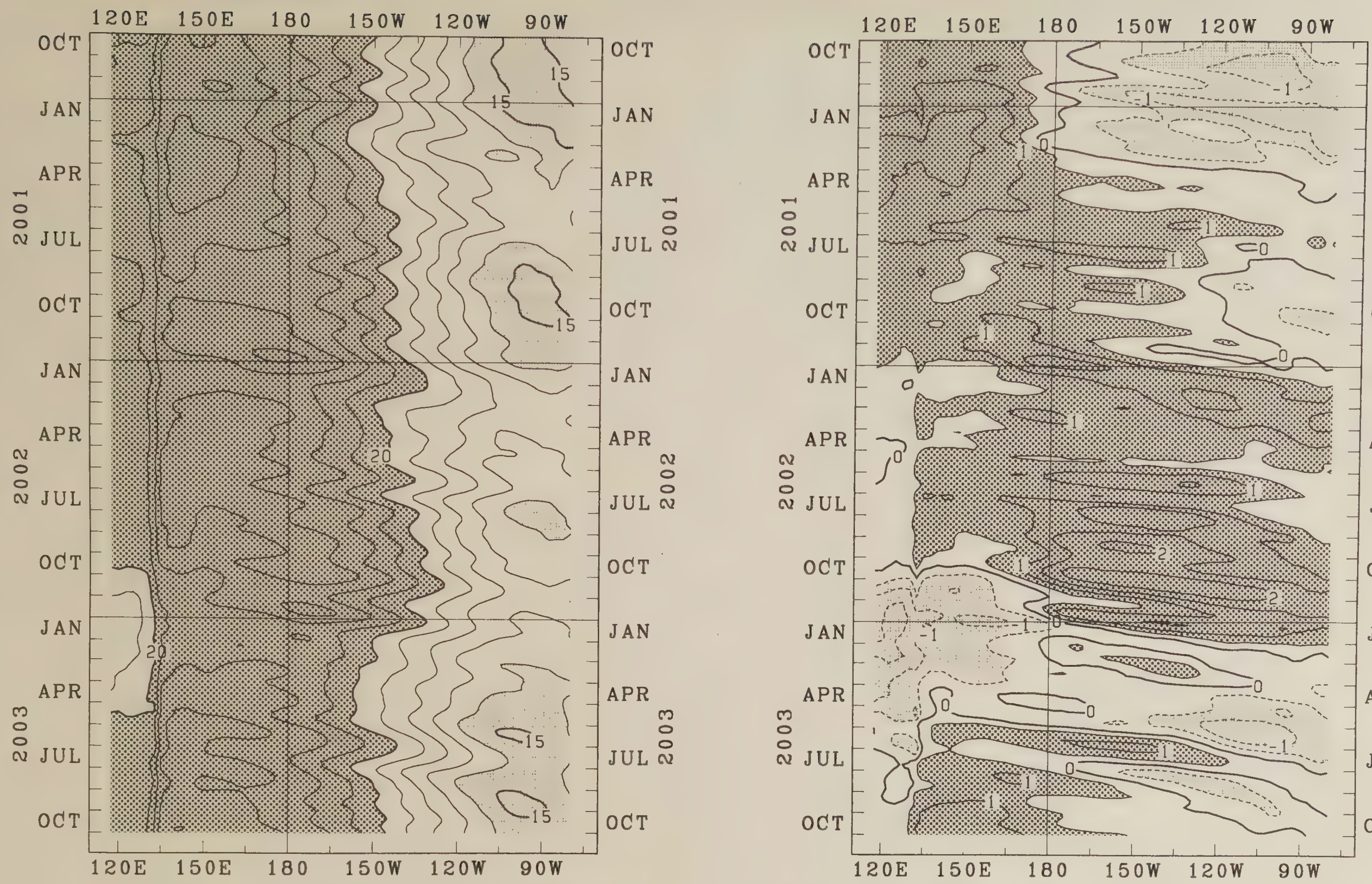
Table 1 Atmospheric and oceanic monitoring indices in the tropical Pacific Ocean



第27図　赤道に沿った海面水温（左）および偏差（右）の時間-経度断面図

Fig. 27　Time-longitude sections of SSTs (left) and anomalies (right) along the equator (2 ˚N-2 ˚S) in the global ocean. Contour interval is 1 ˚C (left) and 0.5 ˚C (right). Values greater than 28 ˚C (+0.5 ˚C) are shaded and values less than 23 ˚C (-0.5 ˚C) are spotted in the left (right) panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1971-2000 base period means.

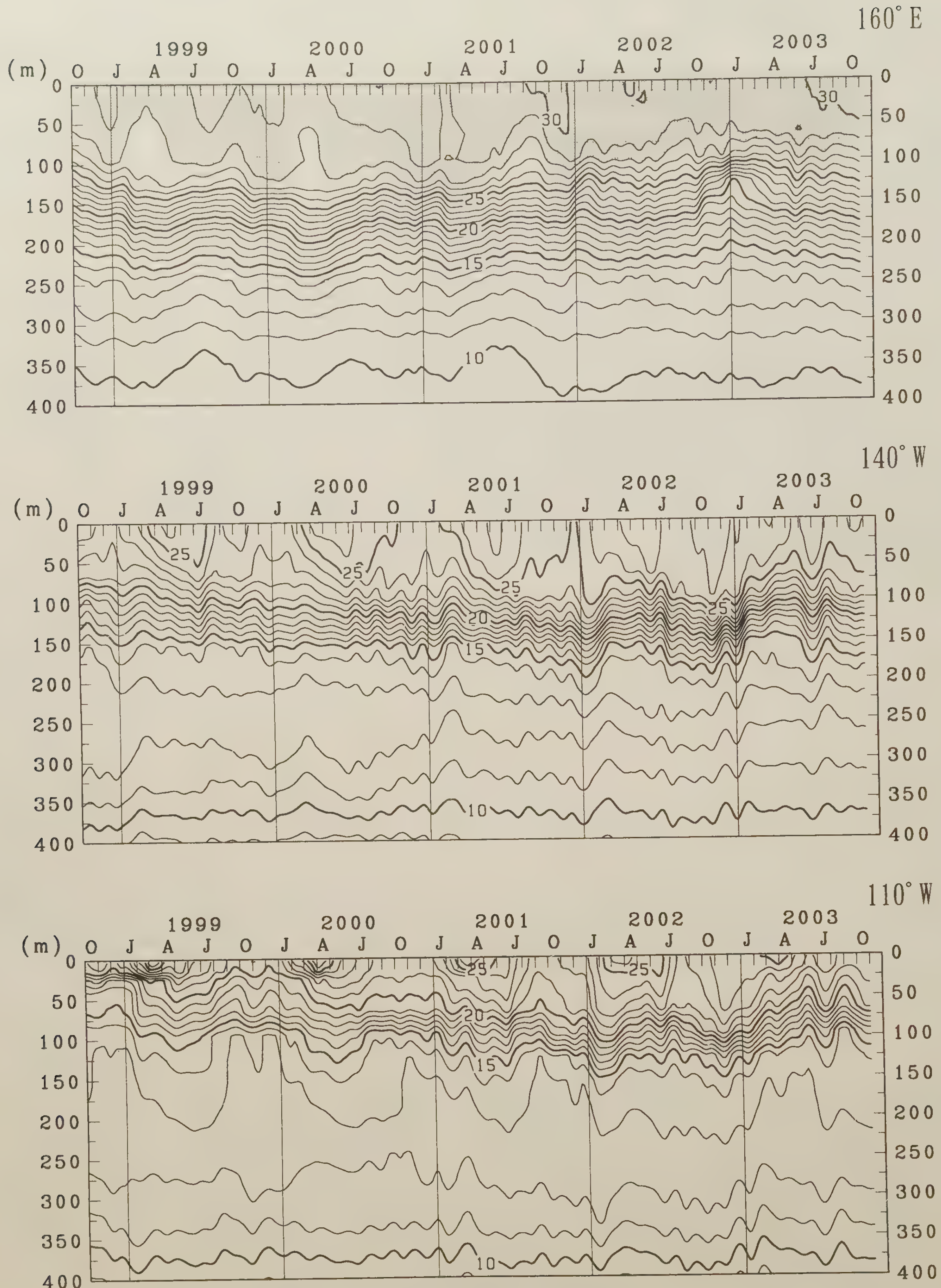
Time-Longitude Sections of Ocean Heat Content & Anomalies (Eq.)



第28図　太平洋の赤道に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図

Fig. 28　Time-longitude sections of ocean heat content in the upper 260 m along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right). Values greater than 20°C (+0.5°C) are shaded and values less than 16°C (−0.5°C) are spotted in the left (right) panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1987-2002 base period means.

Time-depth Sections of Equatorial Subsurface Temperature

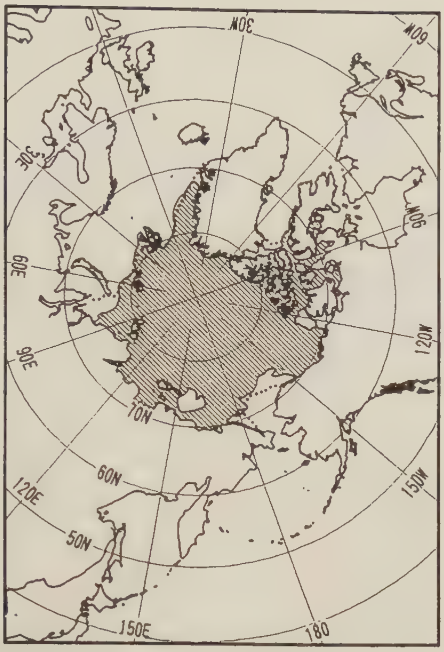


第29図　太平洋赤道域の表層水温の時間－深度断面図

（上：西部、中：中部、下：東部）

Fig. 29 Time-depth sections of equatorial subsurface temperature for the western Pacific (top, 160°E), the central Pacific (middle, 140°W) and the eastern Pacific (bottom, 110°W). Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C. Values greater than 28°C are shaded.

Sea Ice

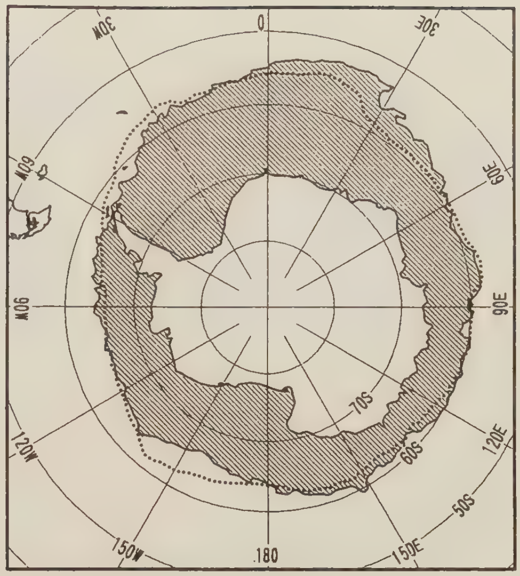


第30-1図　北極域の海氷図（2003年10月15日）

Fig.30–1 Sea ice chart in the Arctic on 15 Oct. 2003.

The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1972 through 1990.

The data source is the National Ice Center (USA).

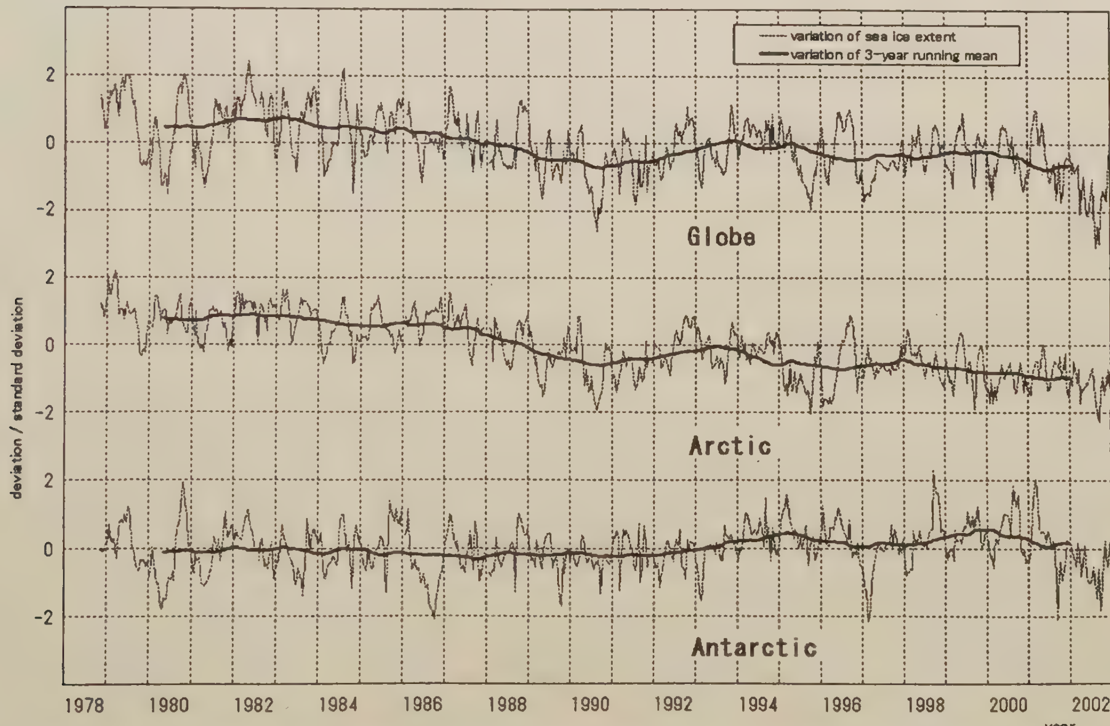


第30-2図　南極域の海氷図（2003年10月15日）

Fig.30–2 Sea ice chart in the Antarctic on 15 Oct. 2003.

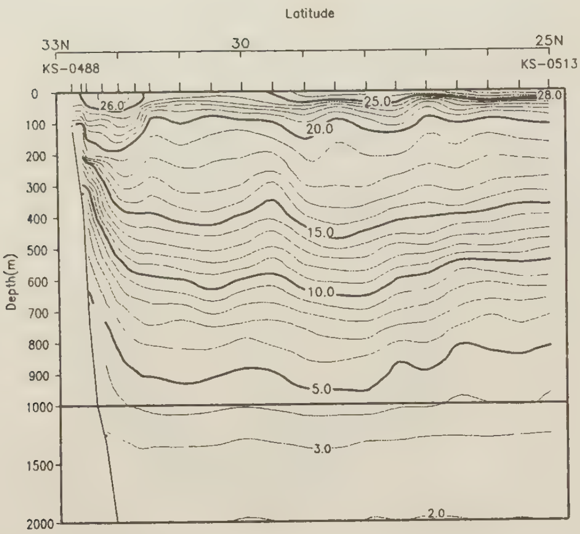
The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1973 through 1990.

The data source is the National Ice Center (USA).

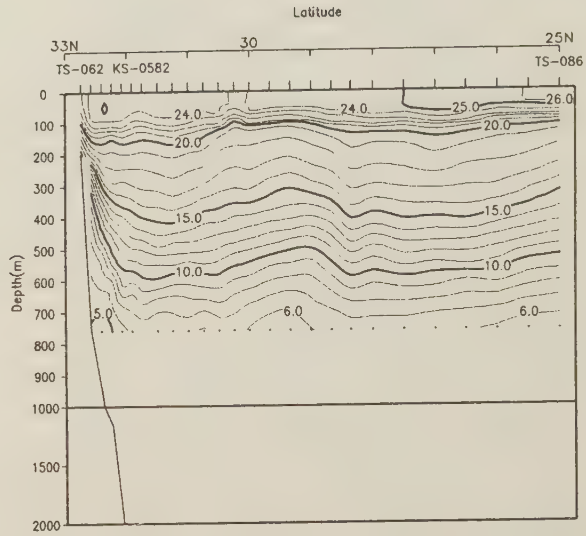


第30-3図 全球、北極及び南極における海氷域面積の偏差（平年差／標準偏差）の時系列図
資料は米国雪氷データセンター提供のSSM/Iデータによる

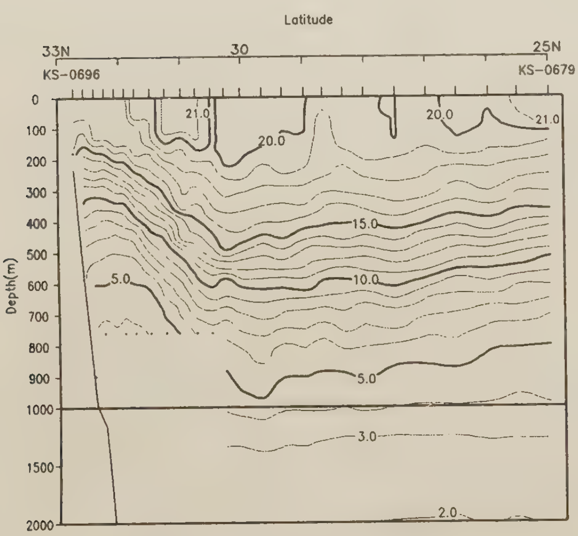
Fig.30–3 Time series of the deviation (deviation from normal)/(standard deviation) of Global, Arctic and Antarctic sea ice extent (Based on SSM/I data by National Snow and Ice Data Center,USA).



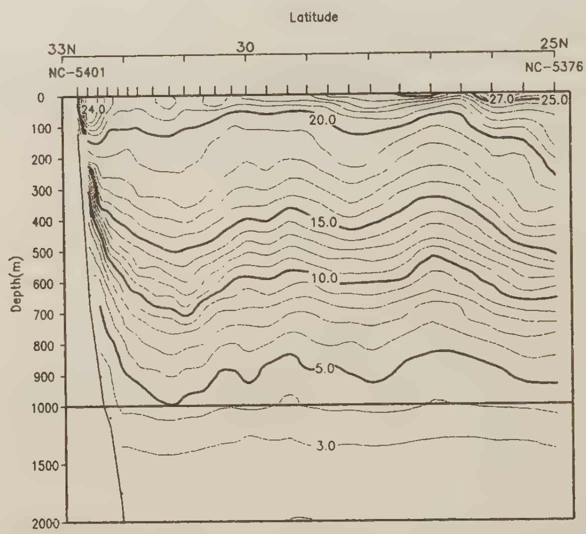
(a) June 2002 (Keifu Maru)



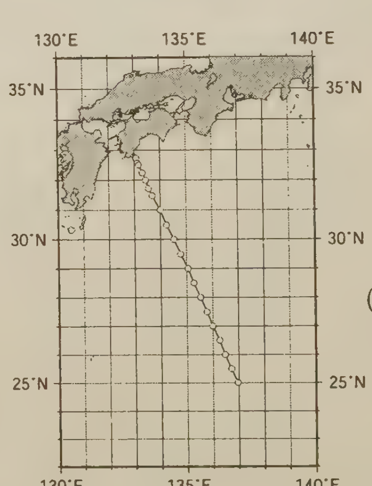
(b) November 2002 (Keifu Maru)



(c) February 2003 (Keifu Maru)



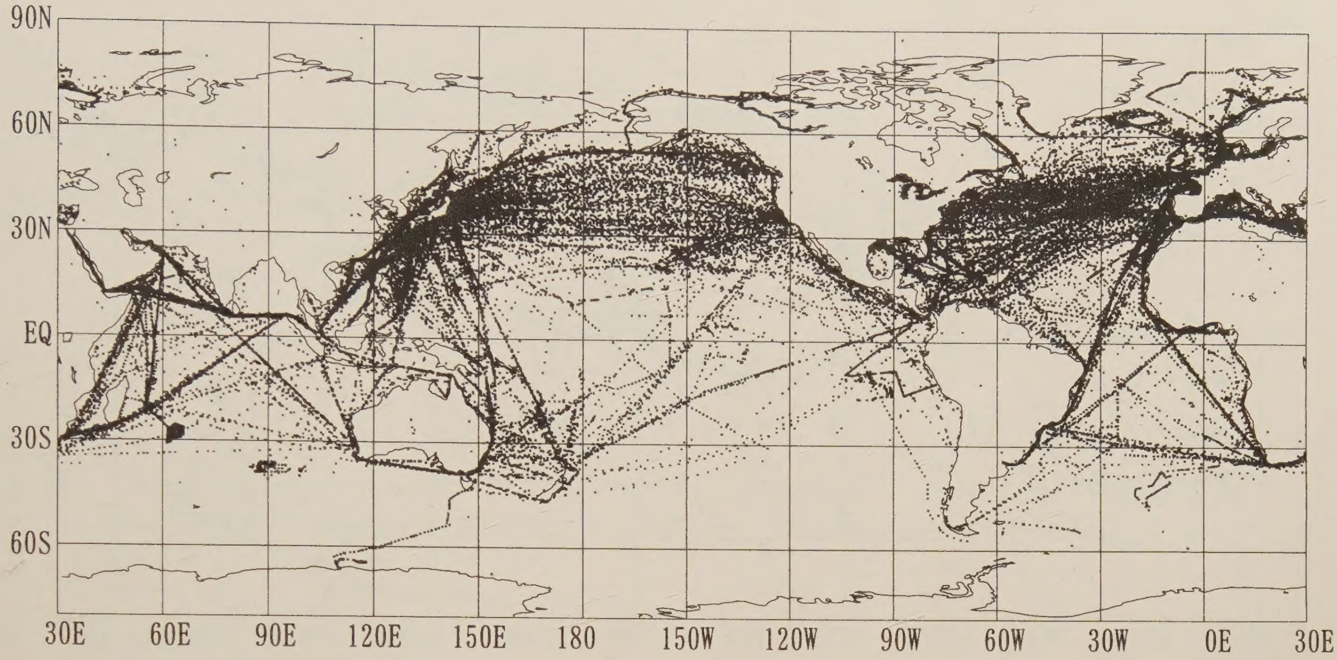
(d) May 2003 (Chofu Maru)



(e)

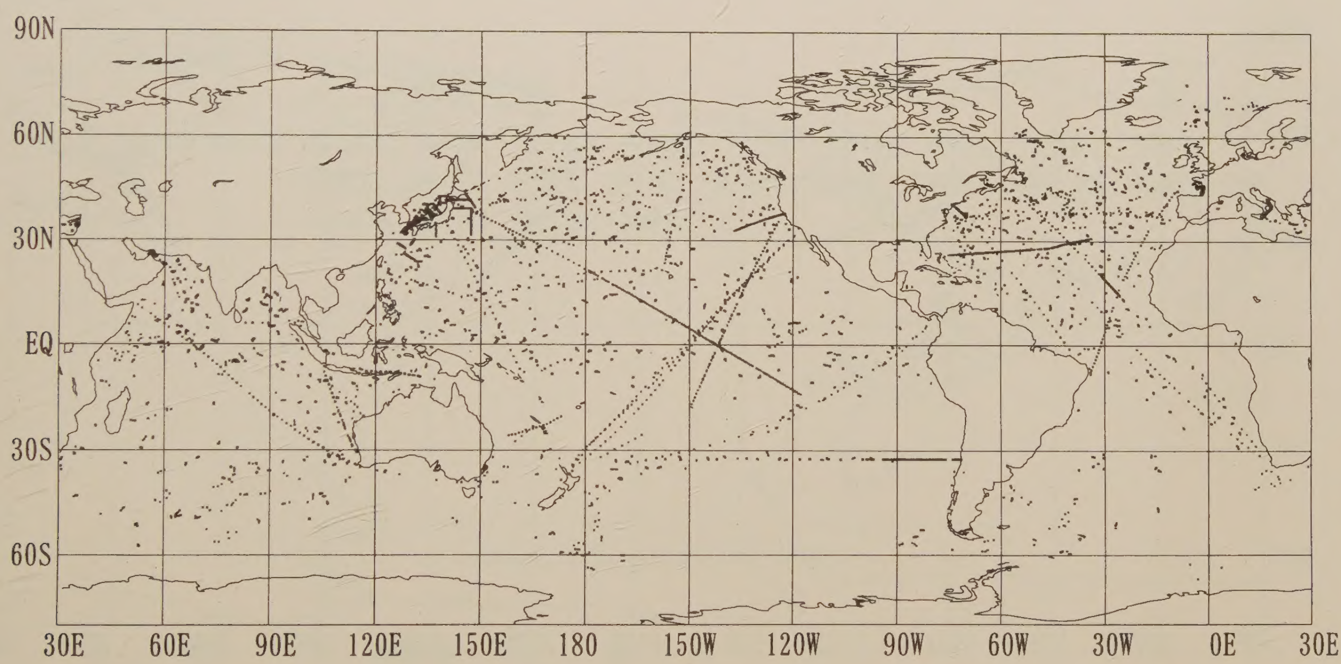
第 31 図 神戸海洋気象台啓風丸及び長崎海洋気象台長風丸による ASUKA 線に沿った水温鉛直断面図. (a) 2002 年 6 月（啓風丸）, (b) 2002 年 11 月（啓風丸）, (c) 2003 年 2 月（啓風丸）, (d) 2003 年 5 月（長風丸）, (e) 観測位置図.

Fig. 31 Vertical sections of water temperature(℃) along the ASUKA line by R/V Keifu Maru of Kobe Marine Observatory and R/V Chofu Maru of Nagasaki Marine Observatory. (a) June 2002(Keifu Maru), (b) November 2002(Keifu Maru), (c) February 2003(Keifu Maru), (d) May 2003(Chofu Maru), (e) Location of observations.



SHIP messages

Total data:177316

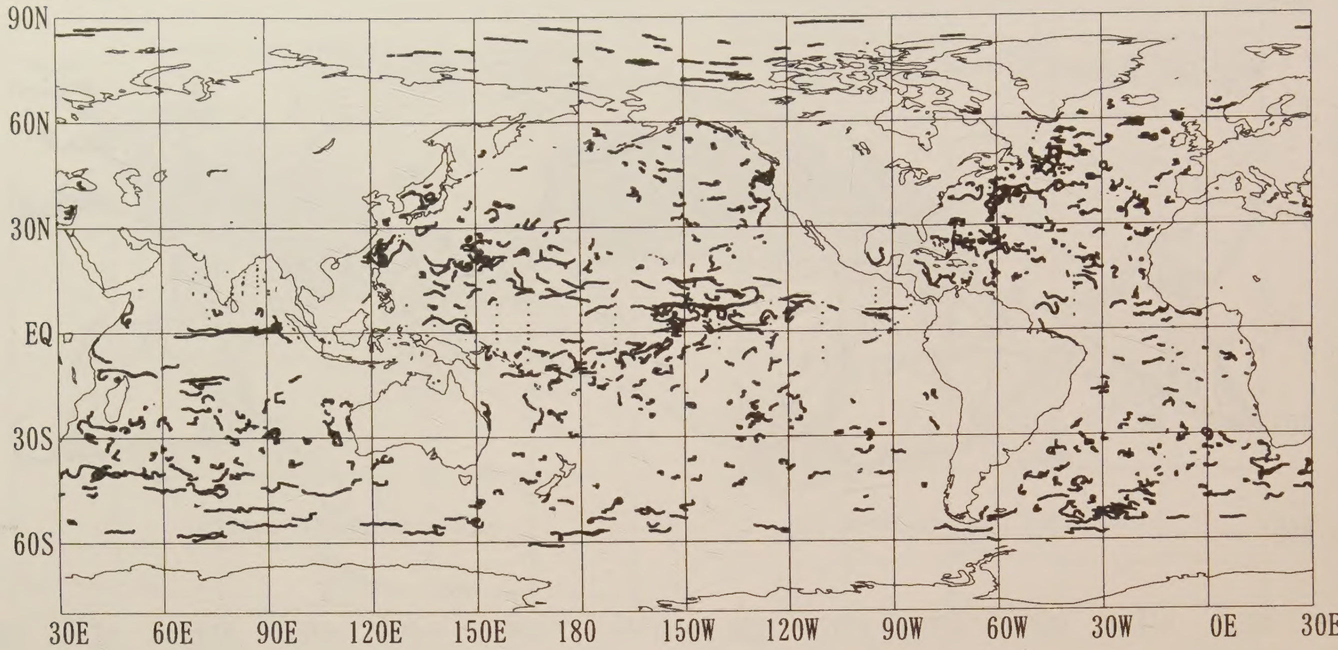


BATHY/TESAC messages

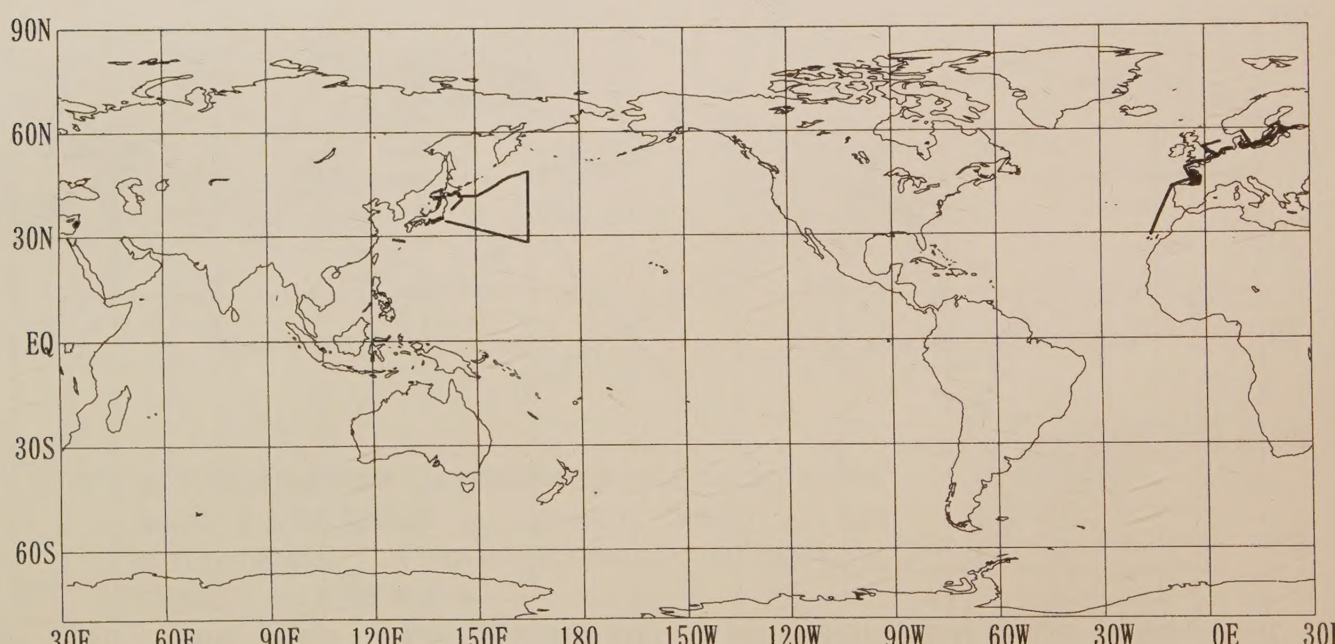
Total data: 8004

第32-1図　測点分布図(2003年10月)

Fig. 32-1 Geographical distribution of SHIP messages (top) and BATHY/TESAC messages (bottom) for October 2003.



BUOY messages Total data:463929



TRACKOB messages Total data: 14455

第32-2図　測点分布図(2003年10月)

Fig. 32-2 Geographical distribution of BUOY messages (top) and TRACKOB messages (bottom) for October 2003.

気　象　庁　海　洋　月　報

Monthly Ocean Report

October 2003 (No. 130)

本月報掲載の 2003 年 10 月のプロダクトには、気象庁が観測したデータ及び GTS（全球気象通信網）を通じて入手した国際気象通報式による通報のほか、下記の機関等から提供いただいたデータを使用しています。御礼申し上げます。

防衛庁、水産庁、海上保安庁

水産総合研究センター

海洋科学技術センター、（社）漁業情報サービスセンター

東京大学

水産試験場等（北海道、青森県、岩手県、宮城県、秋田県、山形県、福島県、茨城県、千葉県、東京都、新潟県、富山県、福井県、愛知県、京都府、兵庫県、和歌山県、鳥取県、島根県、山口県、高知県、長崎県）

（順不同）

平成１５年１１月２０日発行

編集兼　気　象　庁
発行所　東京都千代田区大手町１－３－４

印刷所　有限会社　進英プリント
東京都渋谷区代々木 1-38-19